



website <http://www.lgservice.com>

LG

# LG

## Room Air Conditioner

### ***SERVICE MANUAL***

**MODELS:** *S092CG N40*      *S092CG U40*  
*S122CG N40*      *S122CG U40*  
*S182CG N50*      *S182CG U50*  
*S182HG N50*      *S182HG U50*  
*S242CG N50*      *S242CG U50*  
*S242HG N50*      *S242HG U50*

#### **CAUTION**

- BEFORE SERVICING THE UNIT, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.
- ONLY FOR AUTHORIZED SERVICE PERSONNEL.

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# LG Model Name

2003

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# Safety Precautions



To prevent injury to the user or other people and property damage, the following instructions must be followed.

■ Incorrect operation due to ignoring instruction will cause harm or damage. The seriousness is classified by the following indications.

**⚠ WARNING** This symbol indicates the possibility of death or serious injury.

**⚠ CAUTION** This symbol indicates the possibility of injury or damage to properties only.

■ Meanings of symbols used in this manual are as shown below.

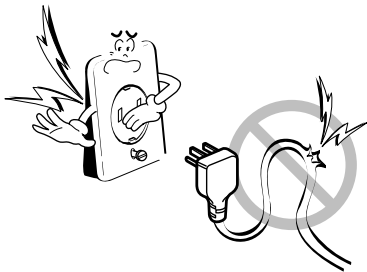
	<b>Be sure not to do.</b>
	<b>Be sure to follow the instruction.</b>

## ⚠ WARNING

### ■ Installation

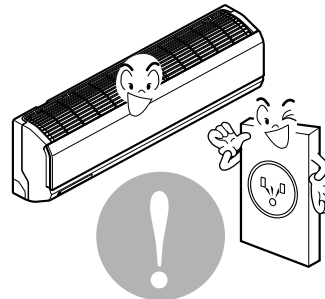
**Do not use damaged power cords, plugs, or a loose socket.**

- There is risk of fire of electric shock.



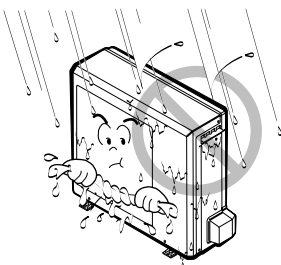
**Always use the power plug and socket with the ground terminal.**

- There is risk of electric shock.



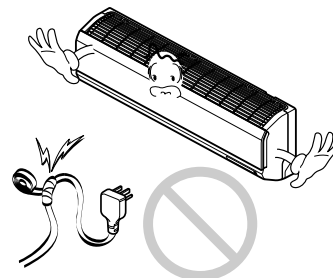
**Install the panel and the cover of control box securely.**

- There is risk of fire of electric shock.



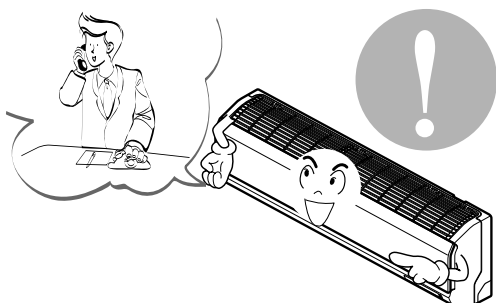
**.Do not modify or extend the power cord.**

- No grounding may cause electric shock.



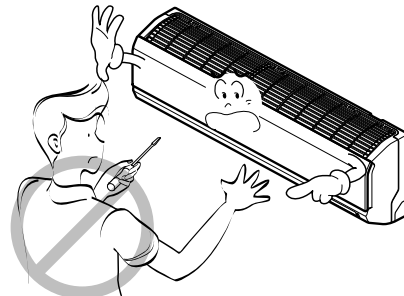
**For re-installation of the installed product, always contact a dealer or an authorized service center.**

- There is risk of fire, electric shock, explosion, or injury.



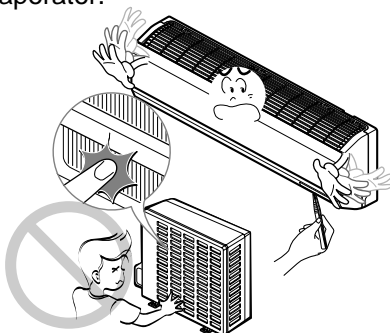
**Do not install, remove, or re-install the unit by yourself.**

- There is risk of fire, electric shock, explosion, or injury.



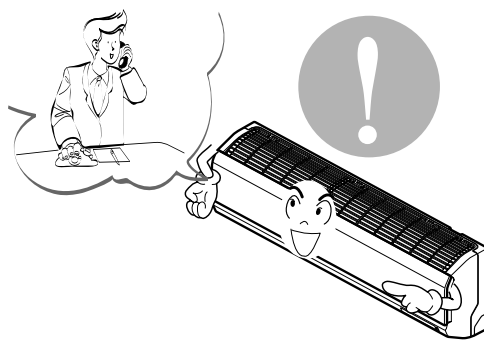
**Be cautious when unpacking and installing the product.**

- Sharp edges could cause injury. Be especially careful of the case edges and the fins on the condenser and evaporator.



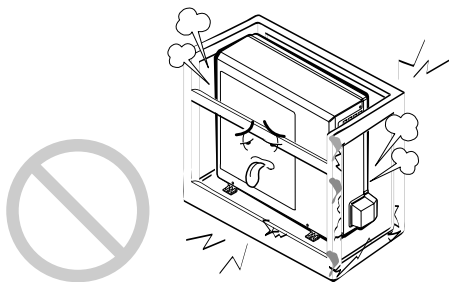
**For installation, always contact the dealer or an Authorized service center**

- There is risk of fire, electric shock, explosion, or injury.



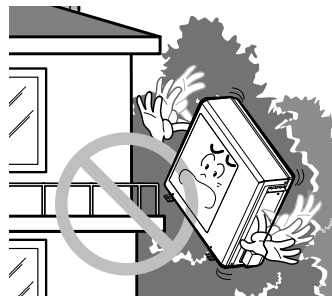
**Do not install the product on a defective installation stand.**

- It may cause injury, accident, or damage to the product.



**Be sure the installation area does not deteriorate with age.**

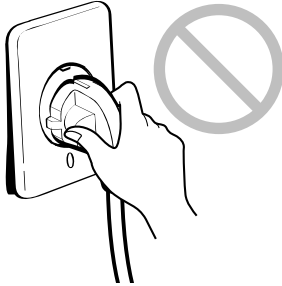
- If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.



## ■ Operation

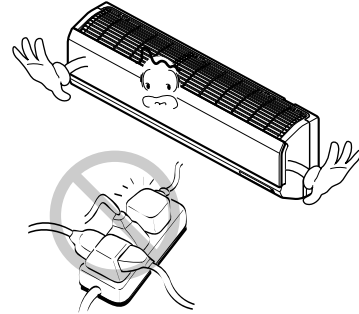
**Do not turn the air-conditioner ON or OFF by plugging or unplugging the power plug.**

- There is risk of fire or electrical shock.



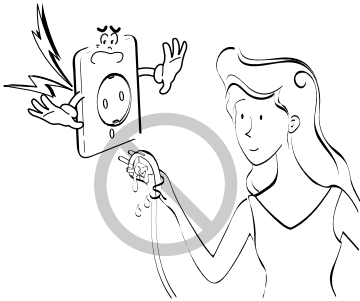
**Use a dedicated outlet for this appliance.**

- There is risk of fire or electrical shock.



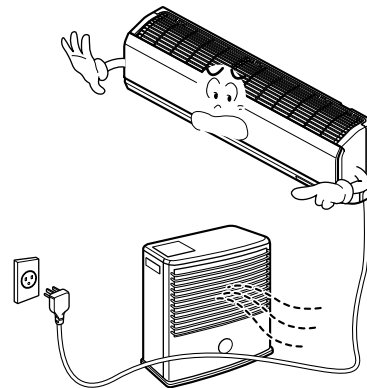
**Grasp the plug to remove the cord from the outlet. Do not touch it with wet hands.**

- There is risk of fire or electrical shock.



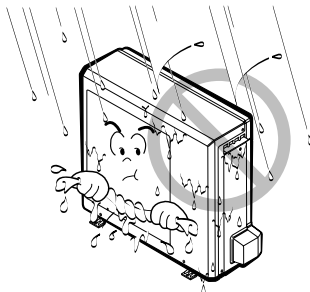
**Do not place a heater or other appliances near the power cable.**

- There is risk of fire and electric shock.



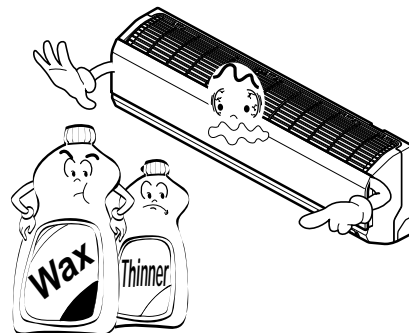
**Do not allow water to run into electrical parts.**

- There is risk of fire, failure of the product, or electric shock.



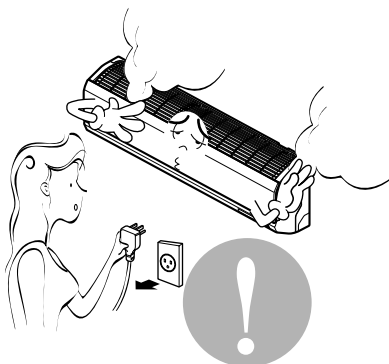
**Do not store or use flammable gas or combustibles near the air conditioner.**

- There is risk of fire or failure of product.



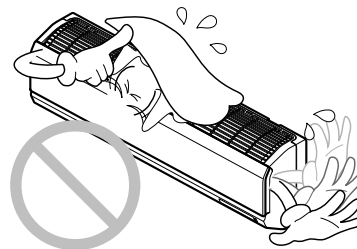
**Unplug the unit if strange sounds, odors, or smoke comes from it.**

- There is risk of electric shock or fire.



**Be cautious that water could not enter the product.**

- There is risk of fire, electric shock, or product damage.



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**⚠ CAUTION**

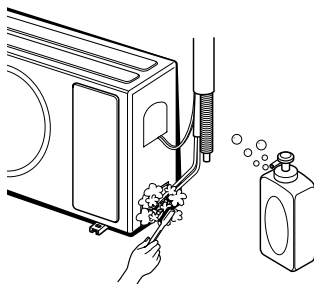
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**■ Installation**

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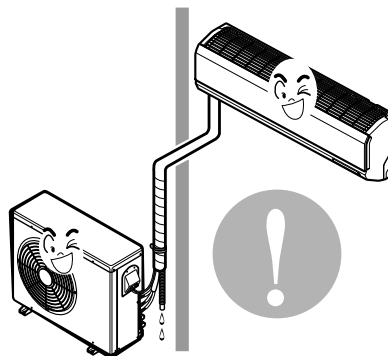
**Always check for gas (refrigerant) leakage after installation or repair of product.**

- Low refrigerant levels may cause failure of product.



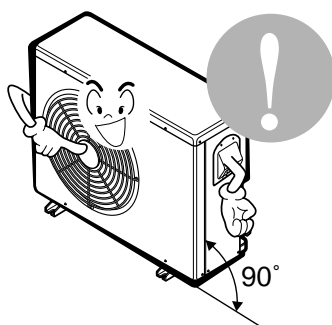
**Install the drain hose to ensure that water is drained away properly.**

- A bad connection may cause water leakage.



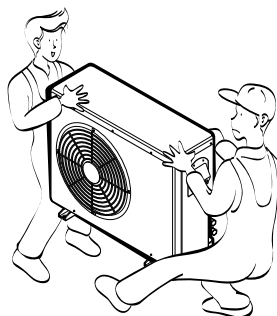
**Keep level even when installing the product.**

- To avoid vibration or water leakage.



**Use two or more people to lift and transport the air conditioner.**

- Avoid personal injury.

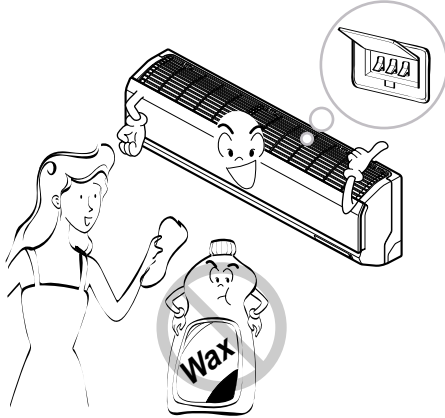




## ■ Operation

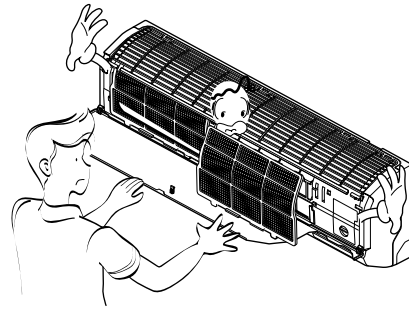
**Use a soft cloth to clean. Do not use harsh detergents, solvents, etc.**

- There is risk of fire, electric shock, or damage to the plastic parts of the product.



**Do not touch the metal parts of the product when removing the air filter. They are very sharp!**

- There is risk of personal injury.



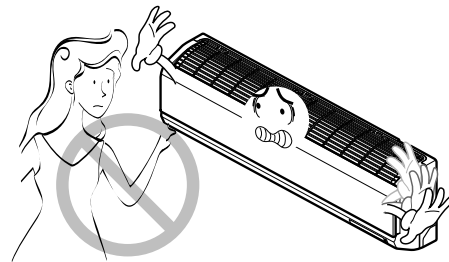
**Do not step on or put anything on the product. (outdoor units)**

- There is risk of personal injury and failure of product.



**Do not insert hands or other objects through the air inlet or outlet while the air conditioner is plugged in.**

- There are sharp and moving parts that could cause personal injury.



# Dimensions

## Symbols Used in this Manual



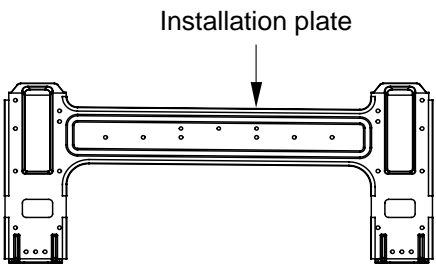
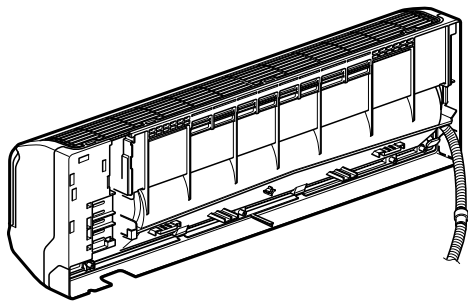
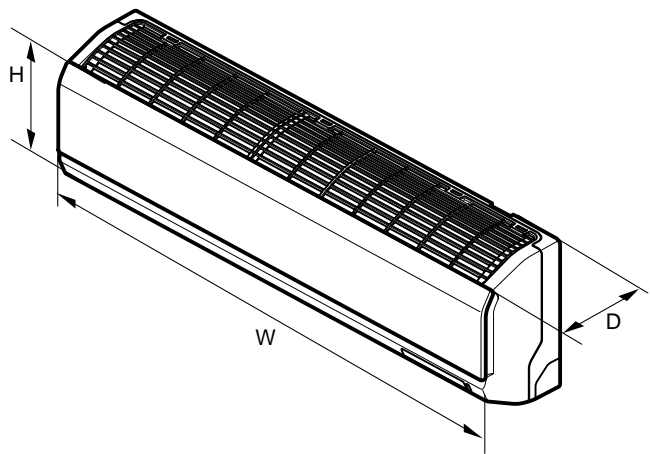
This symbol alerts you to the risk of electric shock.



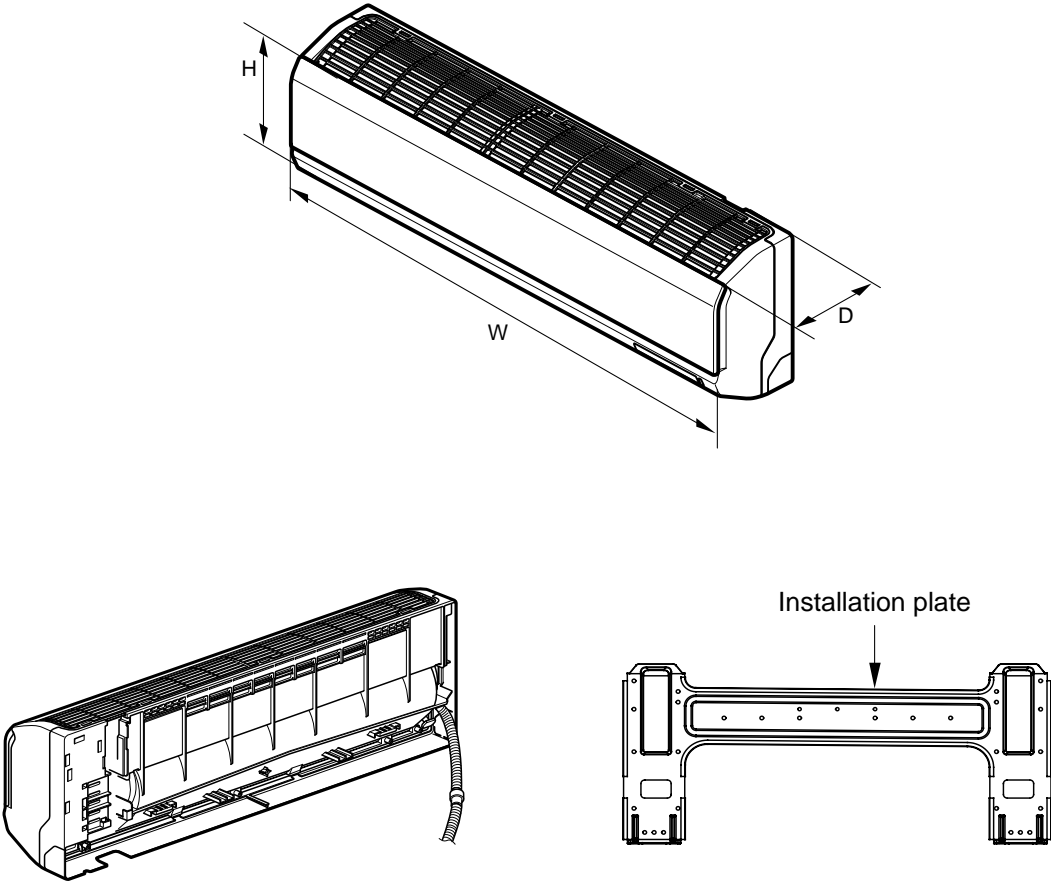
This symbol alerts you to hazards that could cause harm to the air conditioner.

**NOTICE** This symbol indicates special notes.

## Indoor Unit

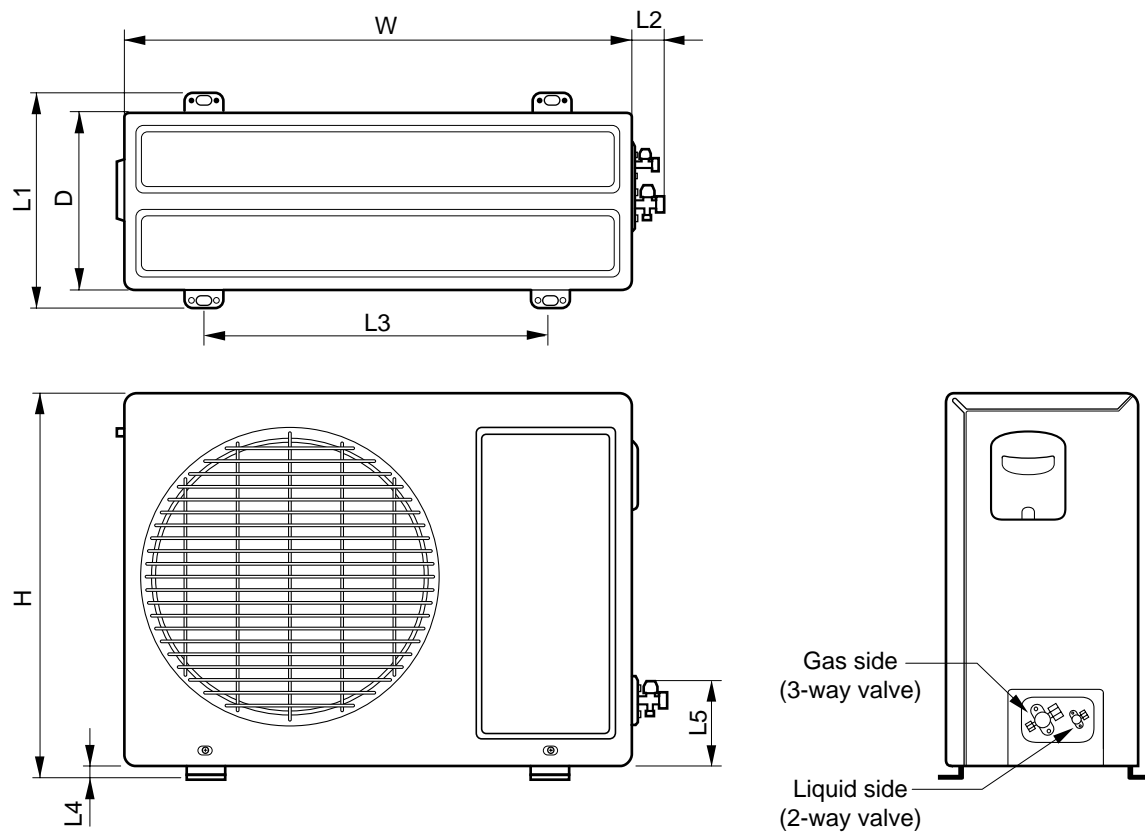


Model		9k, 12k Btu Series
Dimension		
W	mm	840
H	mm	270
D	mm	153

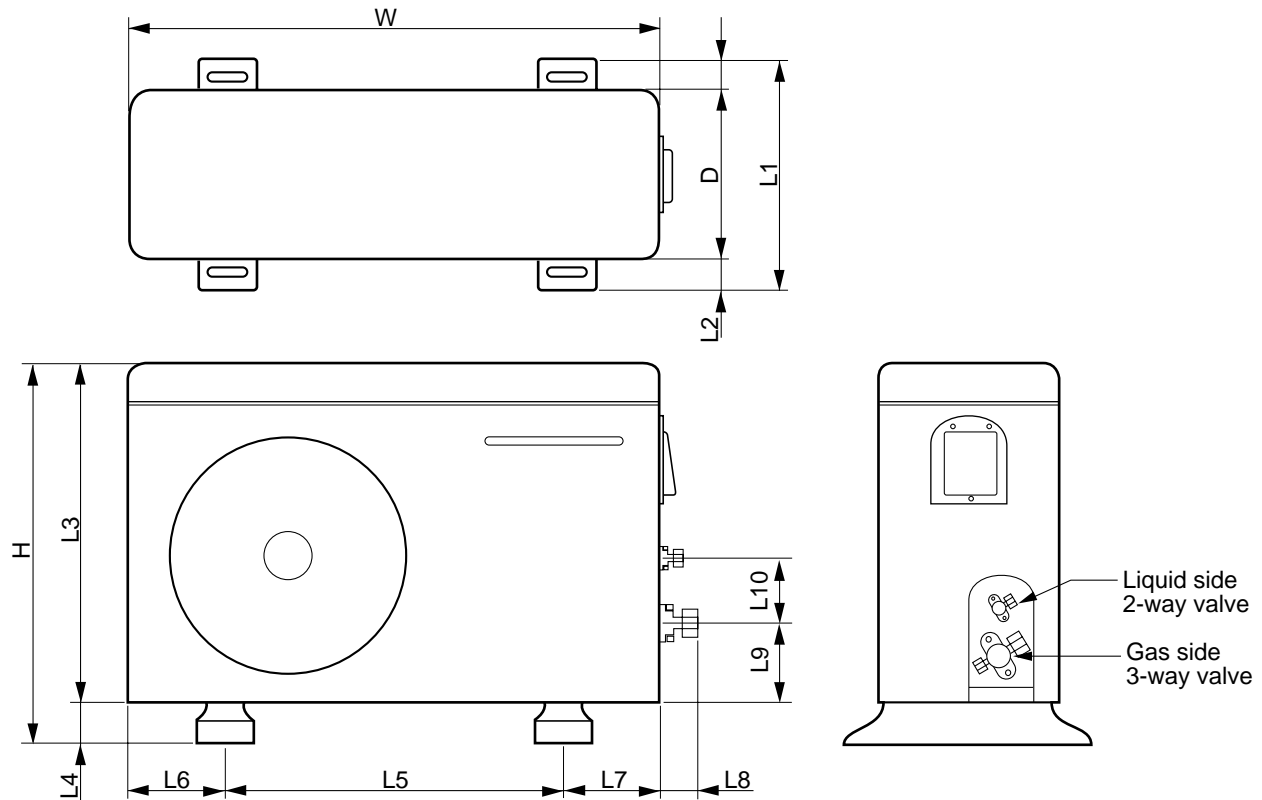


Model		18k, 24k Btu Series
Dimension		
W	mm	1090
H	mm	300
D	mm	178

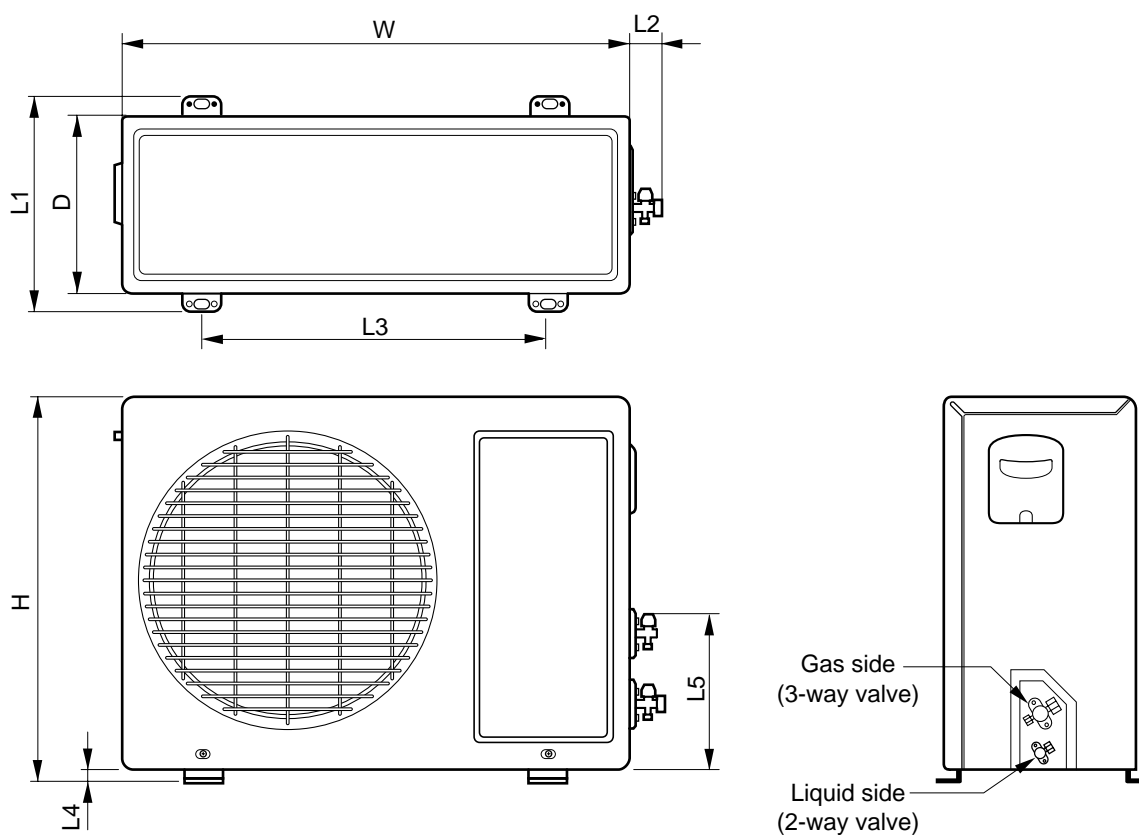
## Outdoor Unit



DIM	MODEL	9k	12k
	unit		
W	mm	575	717
H	mm	525	498
D	mm	260	229
L1	mm	301	270
L2	mm	73	56
L3	mm	392	464
L4	mm	35	17
L5	mm	100	130



DIM	MODEL	
	unit	18k Btu Cooling Only Model
W	mm	801
H	mm	555
D	mm	262
L1	mm	339
L2	mm	37
L3	mm	543.6
L4	mm	11.4
L5	mm	591
L6	mm	105
L7	mm	105
L8	mm	72.5
L9	mm	86.4
L10	mm	77



DIM \ MODEL		18k, 24k Btu Heat Pump, 24k Btu Cooling Only Model
W	mm	840
H	mm	577
D	mm	276
L1	mm	337
L2	mm	64
L3	mm	611
L4	mm	16
L5	mm	156

# Product Specifications

Table-1

Model Name			S092CG	S122CG
Item	Unit			
Cooling Capacity		Btu/h	9,000	12,000
Heating Capacity				
Moisture Removal		l/h	1.2	1.2
Power Source		Ø, V, Hz	1Ø, 220V, 60Hz	1Ø, 220V, 60Hz
Air Circulation	Indoor	m³/min	6.5	8.2
	Outdoor		20	22
Noise Level	Indoor	dB (A)±3	33	41
	Outdoor		48	49
Input	Cooling	W	880	1,200
	Heating			
Running Current	Cooling	A	4.1	5.7
	Heating			
E.E.R.	Cooling	Btu/hW	10.23	10.0
C.O.P	Heating			
Motor Output	Indoor	W	7	14
	Outdoor		23	23
Dimensions (W x H x D)	Indoor	mm	840x270x153	840x270x153
	Outdoor		575x525x260	717x481x228
Net. Weight	Indoor	kg	7	7
	Outdoor		25	25
Refrigerant		g	660(R22)	650(R22)
Airflow Direction Control (Up & Down)			O	O
Airflow Direction Control (Left & Right)			X	X
Chaos Wind			O	O
Timer			24Hr ON/OFF	24Hr ON/OFF
Self Diagnosis			O	O
Remocon Type			L.C.D wireless	L.C.D wireless
Service Valve	Liquid	inch(mm)	1/4"(6.35)	1/4"(6.35)
	Gas		3/8"(9.52)	1/2"(12.7)
Sleeping Operation			O	O
Drain Hose			O	O
Connecting Cable			1.0mm² x 3	1.0mm² x 3
Power Cord			1.0mm²	1.0mm²

**Table-2**

<div>Model Name</div>			S182CG	S242CG	S182HG	S242HG
Item	Unit					
Cooling Capacity		Btu/h	18,000	24,000	18,500/19,800	24000/26,400
Moisture Removal		l/h	1.8	2.9	1.8	2.9
Power Source		Ø, V, Hz	1Ø, 220V, 60Hz	1Ø, 220V, 60Hz	1\1Ø,220V,60Hz	1Ø,220V,60Hz
Air Circulation	Indoor	m³/min	13	15	13	15
	Outdoor		42	42	42	42
Noise Level	Indoor	dB (A)±3	42	45	42	45
	Outdoor		56	56	56	56
Input		W	1,950	2,350	1,960/1,810	2,600/2,550
Running		A	8.9	11.0	9/8.5	12/11.5
E.E.R.		Btu/hW	9.23	10.21	9.44/10.94	9.23/10.35
Motor Output	Indoor	W	20.6	19	20.6	19
	Outdoor		45	86	45	86
Dimensions (W x H x D)	Indoor	mm	1090 x 300 x 178	1090 x 300 x 178	1090 x 300 x 178	1090 x 300 x 178
	Outdoor		801 x 555 x 262	840 x 577 x 276	840 x 577 x 276	840 x 577 x 276
Net. Weight	Indoor	kg	13.5	13.5	13.5	13.5
	Outdoor		60	60	60	60
Refrigerant		g	1,240(R22)	1,350(R22)	1,200(R22)	1,480(R22)
Airflow Direction Control (Up & Down)			O	O	O	O
Airflow Direction Control (Left & Right)			O	O	O	O
Chaos Wind			O	O	O	O
Timer			24Hr ON/OFF	24Hr ON/OFF	24Hr ON/OFF	24Hr ON/OFF
Self Diagnosis			O	O	O	O
Remocon Type			L.C.D wireless	L.C.D wireless	L.C.D wireless	L.C.D wireless
Service Valve	Liquid	inch(mm)	1/4"(6.35)	3/8"(9.52)	1/4"(6.35)	3/8"(9.52)
	Gas		5/8"(15.88)	5/8"(15.88)	5/8"(15.88)	5/8"(15.88)
Sleeping Operation			O	O	O	O
Drain Hose			O	O	O	O
Connecting Cable			1.5mm² x 3	2.5mm² x 3	1.5mm² x 3, 0.75mm² x 3	2.5mm² x 3, 0.75mm² x 3
Power Cord			1.5mm² x 3	2.5mm² x 3	1.5mm² x 3	2.5mm² x 3

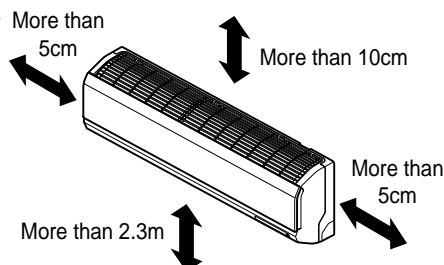


# Installation

## Selection of the Best Location

### Indoor unit

- Do not have any heat or steam near the unit.
- Select a place where there are no obstacles in front of the unit.
- Make sure that condensation drainage can be conveniently routed away.  
Do not install near a doorway.
- Ensure that the space around the left and right of the unit is more than "A". The unit should be installed as high on the wall as possible, allowing a minimum of "B" from ceiling.
- Use a stud finder to locate studs to prevent unnecessary damage to the wall.



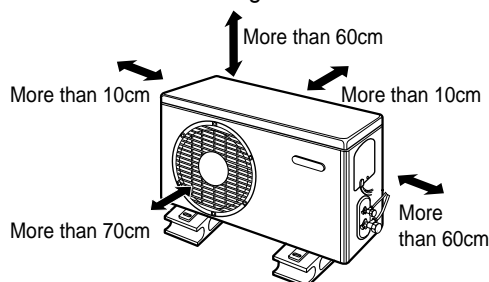
### CAUTION

Install the indoor unit on the wall where the height from the floors more than 2.3 meters.

Grade	Clearance(cm)	
	A	B
5K~28K	10	5
30K~38K	30	12

### Outdoor unit

- If an awning is built over the unit to prevent direct sunlight or rain exposure, make sure that heat radiation from the condenser is not restricted.
- Ensure that the space around the back and sides is more than 10cm. The front of the unit should have more than 70cm of space.
- Do not place animals and plants in the path of the warm air.
- Take the air conditioner weight into account and select a place where noise and vibration are minimum.
- Select a place so that the warm air and noise from the air conditioner do not disturb neighbors.

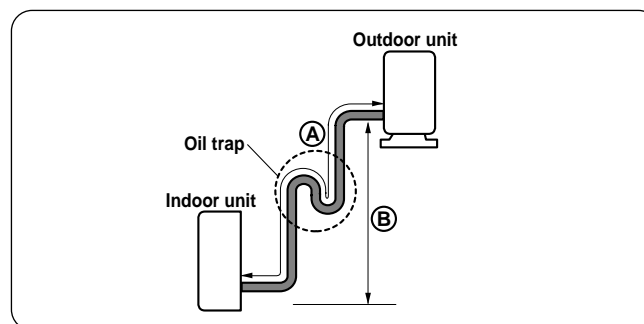
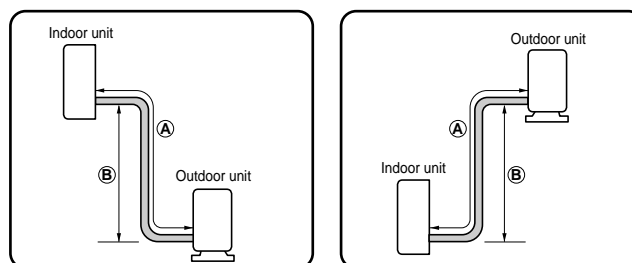


### Rooftop Installations:

- If the outdoor unit is installed on a roof structure, be sure to level the unit. Ensure the roof structure and anchoring method are adequate for the unit location.
- Consult local codes regarding rooftop mounting.

## Piping Length and Elevation

Capacity (Btu/h)	Pipe Size		Standard Length (m)	Max. Elevation B (m)	Max. Length A (m)	Additional Refrigerant (g/m)
	GAS	LIQUID				
5k~14k	3/8" (Ø9.52)	1/4" (Ø6.35)	4 or 7.5	7	15	20
	1/2" (Ø12.7)	1/4" (Ø6.35)	4 or 7.5	7	15	20
18k~28k	1/2" (Ø12.7)	1/4" (Ø6.35)	4 or 7.5	15	30	20
	5/8" (Ø15.88)	1/4" (Ø6.35)	4 or 7.5	15	30	20
30k~38k	5/8" (Ø15.88)	3/8" (Ø9.52)	4 or 7.5	15	30	30
	5/8" (Ø15.88)	3/8" (Ø9.52)	7.5	15	30	30
	3/4" (Ø19.05)	3/8" (Ø9.52)	7.5	15	30	50



If case more than 5m

### CAUTION

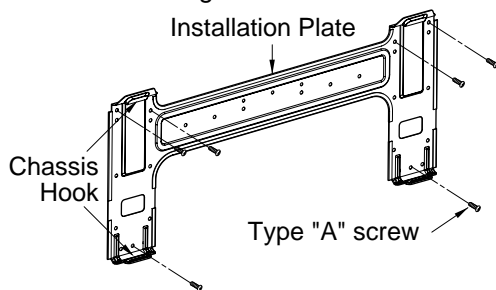
- Capacity is based on standard length and maximum allowance length is on the basis of reliability.
- Oil trap should be installed every 5~7 meters.

## How to Fix Installation Plate

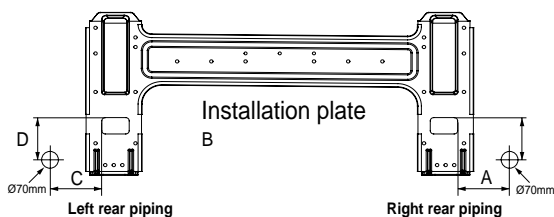
The wall you select should be strong and solid enough to prevent vibration

### 1. Mount the installation plate on the wall with four type A screws. If mounting the unit on a concrete wall, use anchor bolts.

- Mount the installation plate horizontally by aligning the centerline using a level.



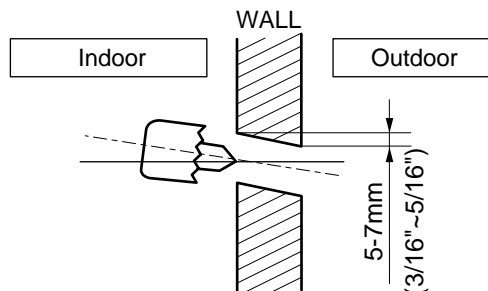
### 2. Measure the wall and mark the centerline. It is also important to use caution concerning the location of the installation plate—routing of the wiring to power outlets is through the walls typically. Drilling the hole through the wall for piping connections must be done safely.



CHASSIS (Grade)	Distance (mm)			
	A	B	C	D
7k, 9k, 12k	75	65	105	65
18k, 24k	105	65	260	65

## Drill a Hole in the Wall

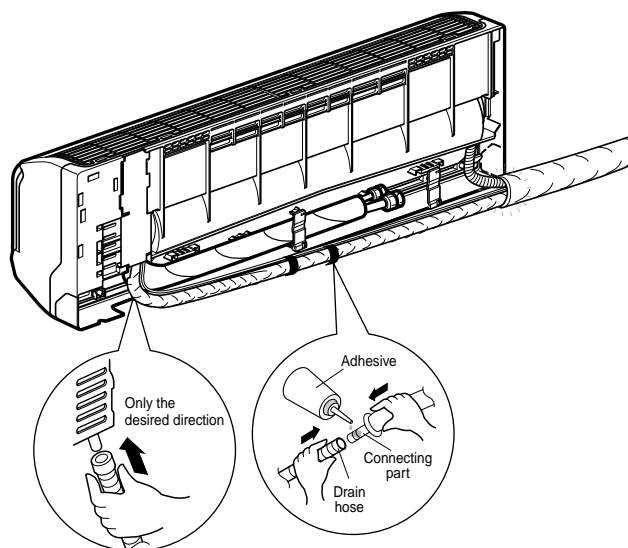
- Drill the piping hole with a  $\varnothing 70\text{mm}$  hole core drill. Drill the piping hole at either the right or the left with the hole slightly slanted to the outdoor side.



- Open the Front Grille.
- Pass Telephone Control Cord Wire through the hole which the power cord goes through.
- Connect Telephone Control Cord Wire to the phone jack of telephone PCB of Control Box.
- Fix Telephone Control Cord Wire inside Control box so as not to disconnect.
- Close the Front Grille.

## Drain hose junction

- Remove the rubber stopple in the desired drain direction.
- Insert drain hose into the handle of drain pan, and join drain hose and connecting hose according to the figure by.



# Flaring work and connection of piping

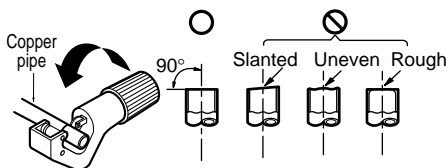
## Flaring work

### Flaring work

Main cause for refrigerant leakage is due to defect in the flaring work. Carry out correct flaring work using the following procedure.

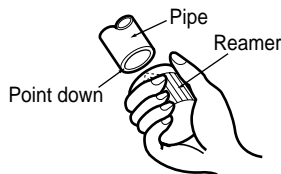
#### Cut the pipes and the cable.

- Use the piping kit accessory or pipes purchased locally.
- Measure the distance between the indoor and the outdoor unit.
- Cut the pipes a little longer than the measured distance.
- Cut the cable 1.5m longer than the pipe length.



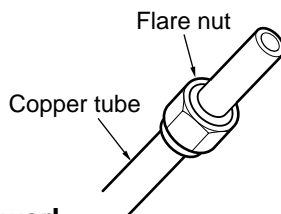
#### Burr removal

- Completely remove all burrs from the cut cross section of pipe/tube.
- Put the end of the copper tube/pipe in a downward direction as you remove burrs in order to avoid dropping burrs into the tubing.



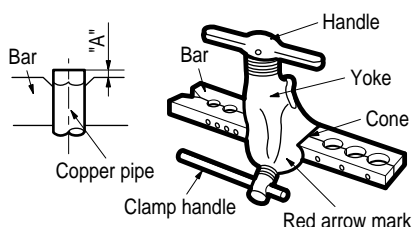
#### Putting nut on

- Remove flare nuts attached to indoor and outdoor unit, then put them on pipe/tube having completed burr removal. (not possible to put them on after flaring work)



#### Flaring work

- Firmly hold copper pipe in a die in the dimension shown in the table above.

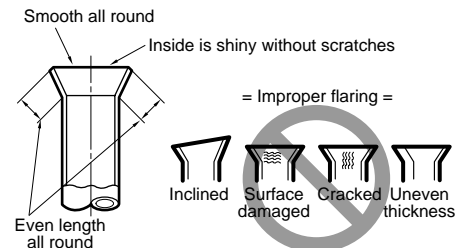


- Carry out flaring work using flaring tool as shown below.

Outside diameter		A
mm	inch	mm
Ø6.35	1/4	0~0.5
Ø9.52	3/8	0~0.5
Ø12.7	1/2	0~0.5
Ø15.88	5/8	0~1.0
Ø19.05	3/4	1.0~1.3

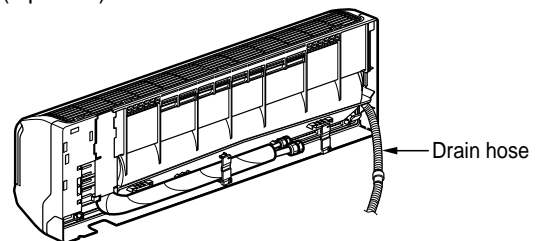
#### Check

- Compare the flared work with figure below.
- If flare is noted to be defective, cut off the flared section and re-flare it.



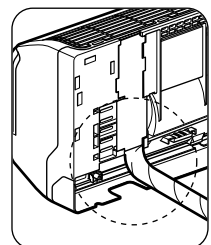
## Connection of piping -- Indoor

- Preparing the indoor unit's piping and drain hose for installation through the wall.
- Remove the plastic tubing retainer (see illustration below) and pull the tubing and drain hose away from chassis.
- Replace the plastic tubing holder in the original position. (Optional)



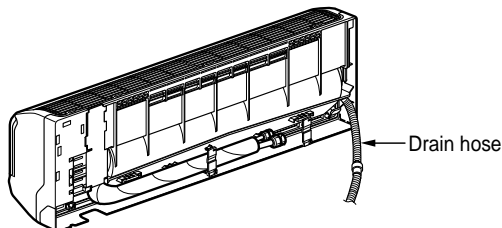
### CAUTION

When install, make sure that the remaining parts must be removed clearly so as not to damage the piping and drain hose, especially power cord and connecting cable.



## For right rear piping

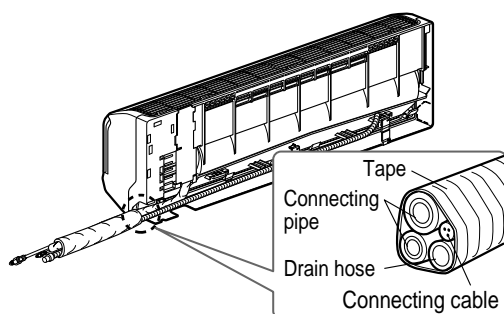
Route the indoor tubing and the drain hose in the direction of rear right.



Insert the connecting cable into the indoor unit from the outdoor unit through the piping hole.

- Do not connect the cable to the indoor unit.
- Make a small loop with the cable for easy connection later.

Tape the tubing, drain hose, and the connecting cable. Be sure that the drain hose is located at the lowest side of the bundle. Locating at the upper side can cause drain pan to overflow inside the unit.

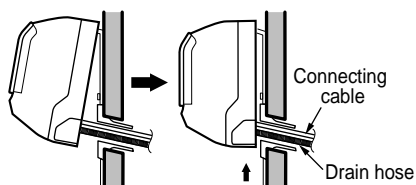


**NOTE:** If the drain hose is routed inside the room, insulate the hose with an insulation material\* so that dripping from "sweating"(condensation) will not damage furniture or floors.

\*Foamed polyethylene or equivalent is recommended.

## Indoor unit installation

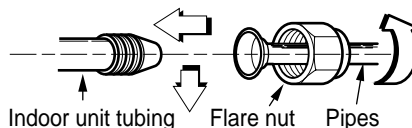
- Hook the indoor unit onto the upper portion of the installation plate.(Engage the two hooks of the rear top of the indoor unit with the upper edge of the installation plate.) Ensure that the hooks are properly seated on the installation plate by moving it left and right.



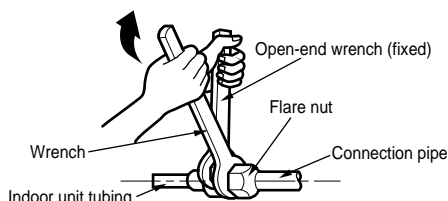
Press the lower left and right sides of the unit against the installation plate until the hooks engage into their slots(clicking sound).

## Connecting the pipings to the indoor unit and drain hose to drain pipe.

- Align the center of the pipes and sufficiently tighten the flare nut by hand.

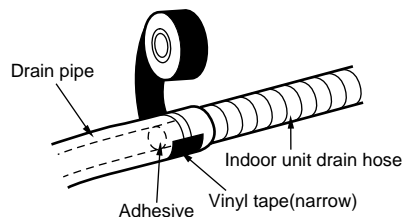


- Tighten the flare nut with a wrench.



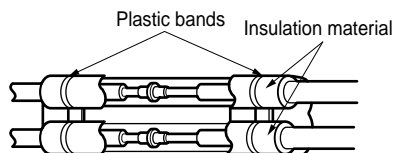
Outside diameter		Torque
mm	inch	kg-m
Ø6.35	1/4	1.8
Ø9.52	3/8	4.2
Ø12.7	1/2	5.5
Ø15.88	5/8	6.6
Ø19.05	3/4	6.6

- When extending the drain hose at the indoor unit, install the drain pipe.

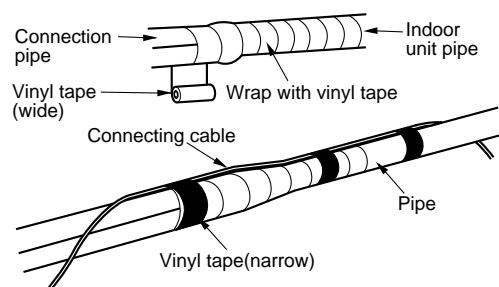


## Wrap the insulation material around the connecting portion.

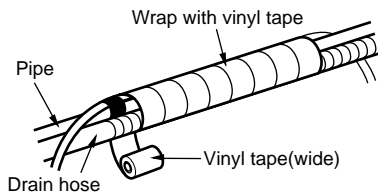
- Overlap the connection pipe insulation material and the indoor unit pipe insulation material. Bind them together with vinyl tape so that there is no gap.



- Wrap the area which accommodates the rear piping housing section with vinyl tape.

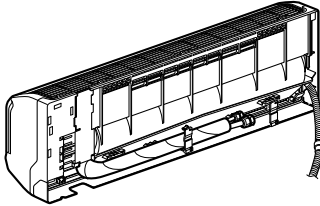


- Bundle the piping and drain hose together by wrapping them with vinyl tape for enough to cover where they fit into the rear piping housing section.

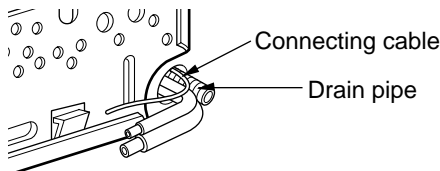


### For left rear piping

Route the indoor tubing and the drain hose to the required piping hole position.



Insert the piping, drain hose, and the connecting cable into the piping hole.

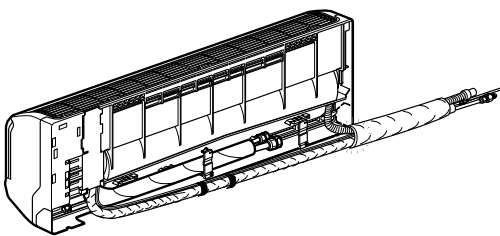


Insert the connecting cable into the indoor unit.

- Don't connect the cable to the indoor unit.
- Make a small loop with the cable for easy connection later.

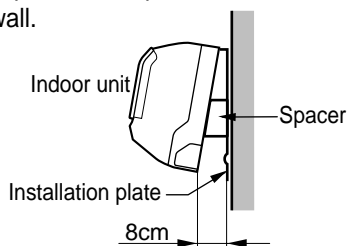
Tape the drain hose and the connecting cable.

- Connecting cable



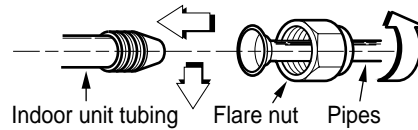
### Indoor unit installation

- Hang the indoor unit from the hooks at the top of the installation plate.
- Insert the spacer etc. between the indoor unit and the installation plate and separate the bottom of the indoor unit from the wall.

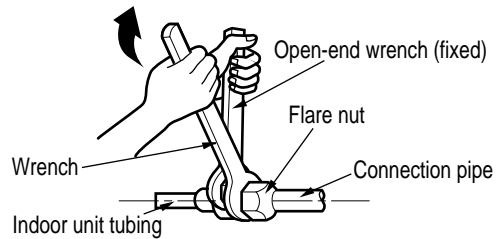


### Connecting the pipings to the indoor unit and the drain hose to drain pipe.

- Align the center of the pipes and sufficiently tighten the flare nut by hand.

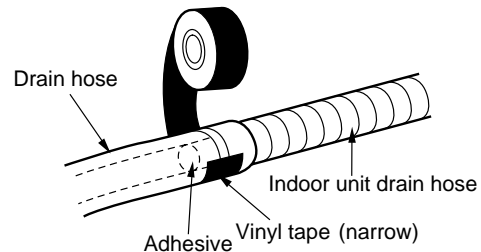


- Tighten the flare nut with a wrench.



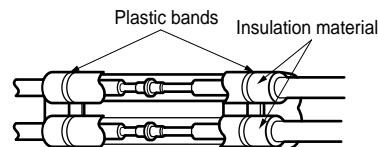
Outside diameter		Torque
mm	inch	kg·m
Ø6.35	1/4	1.8
Ø9.52	3/8	4.2
Ø12.7	1/2	5.5
Ø15.88	5/8	6.6
Ø19.05	3/4	6.6

- When extending the drain hose at the indoor unit, install the drain pipe.

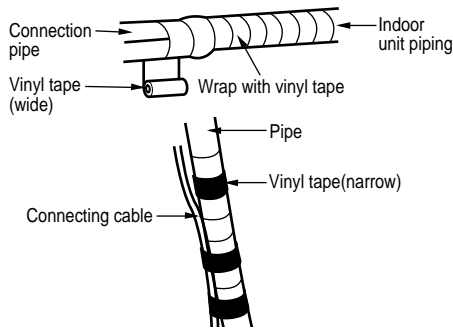


Wrap the insulation material around the connecting portion.

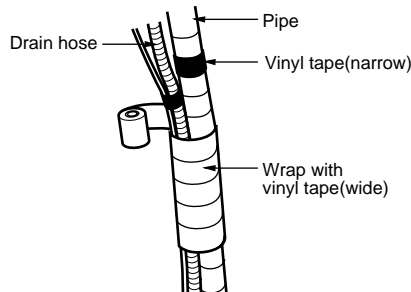
- Overlap the connection pipe heat insulation and the indoor unit pipe heat insulation material. Bind them together with vinyl tape so that there is no gap.



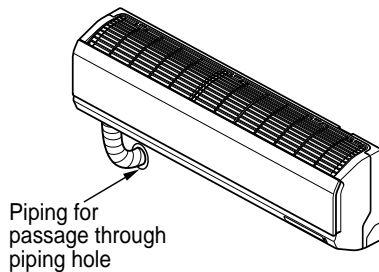
- Wrap the area which accommodates the rear piping housing section with vinyl tape.



- Bundle the piping and drain hose together by wrapping them with cloth tape over the range within which they fit into the rear piping housing section.

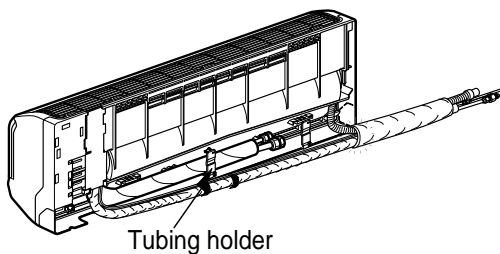


**Reroute the pipings and the drain hose across the back of the chassis.**



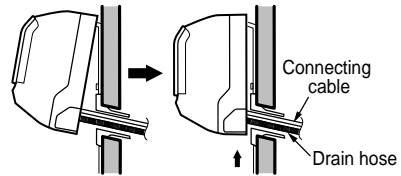
**Set the pipings and the drain hose to the back of the chassis with the tubing holder.**

- Hook the edge of tubing holder to tap on chassis and push the bottom of tubing holder to be engaged at the bottom of chassis.



## Indoor unit installation

- Remove the spacer.
- Ensure that the hooks are properly seated on the installation plate by moving it left and right.



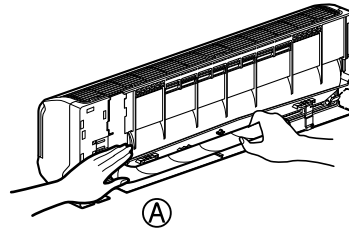
*Press the lower left and right sides of the unit against the installation plate until the hooks engage into their slots (clicking sound).*

## ⚠ CAUTION

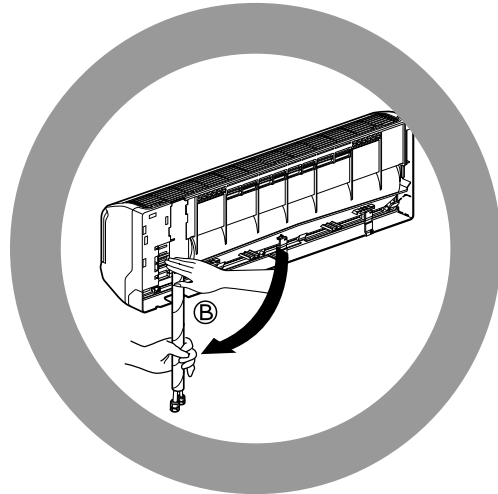
### Installation Information (For left piping)

- Good case  
For left piping. Follow the instruction below.

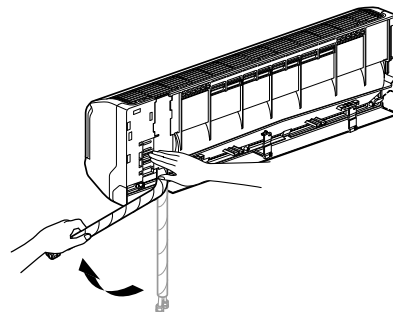
- Press on the upper side of clamp. (A)



- Unfold the tubing to downward slowly. (B)

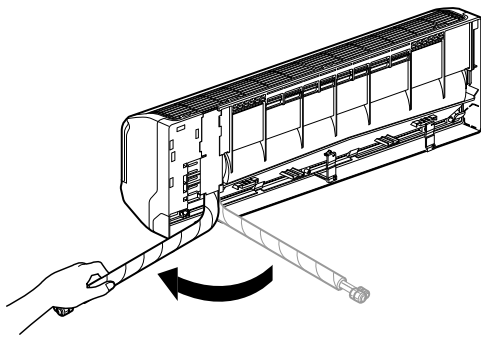
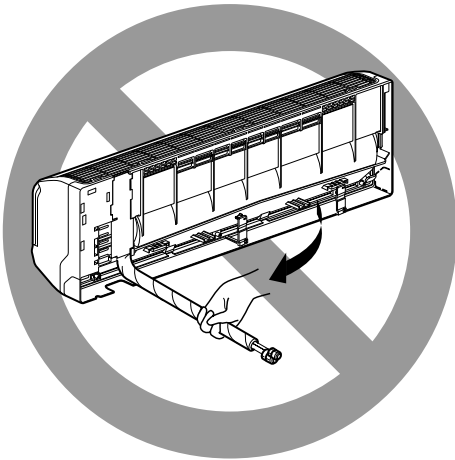
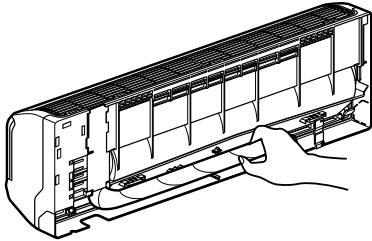


- Bend the tubing to the left side of chassis.



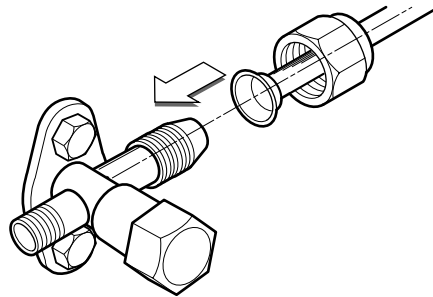
## ⚠ CAUTION

- Bad case
- Following bending type from right to left could cause problem of pipe damage.



## Connection of the pipes-Outdoor

Align the center of the pipings and sufficiently tighten the flare nut by hand.

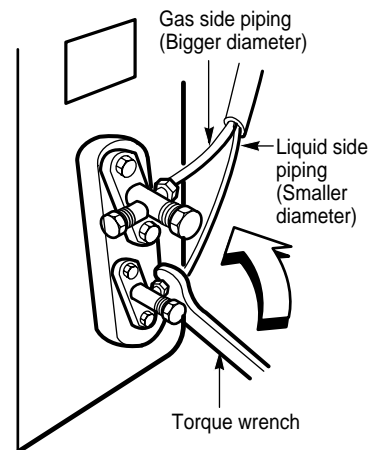


Finally, tighten the flare nut with torque wrench until the wrench clicks.

- When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.

Outside diameter		Torque
mm	inch	kg·m
Ø6.35	1/4	1.8
Ø9.52	3/8	4.2
Ø12.7	1/2	5.5
Ø15.88	5/8	6.6
Ø19.05	3/4	6.6

### Outdoor unit



# Connecting the cable between indoor unit and outdoor unit

## Connect the cable to the Indoor unit.

- Connect the cable to the indoor unit by connecting the wires to the terminals on the control board individually according to the outdoor unit connection. (Ensure that the color of the wires of the outdoor unit and the terminal No. are the same as those of the indoor unit.). The earth wire should be longer than the common wires.

The above circuit diagram is subject to change without notice.  
When installing, refer to the circuit diagram on the control box inside Indoor Unit.

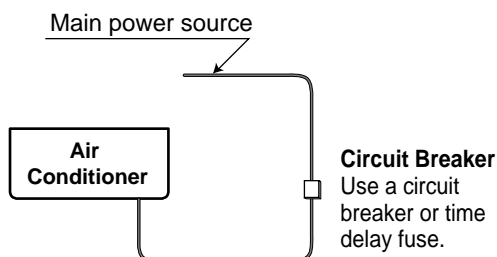
- When installing, refer to the circuit diagram on the Control Box of Indoor Unit.
- When installing, refer to the wiring diagram on the Control Cover Inside Outdoor Unit.

### ⚠ CAUTION

- The above circuit diagram is subject to change without notice.
- Be sure to connect wires according to the wiring diagram.
- Connect the wires firmly, so that not to be pulled out easily.
- Connect the wires according to color codes by referring the wiring diagram.

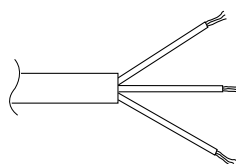
### ⚠ CAUTION

- If a power plug is not to be used, provide a circuit breaker between power source and the unit as shown below.



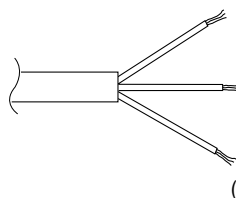
### ⚠ CAUTION

The power cord connected to the "A" unit should be complied with the following specifications (Type "B" approved by HAR or SAA).

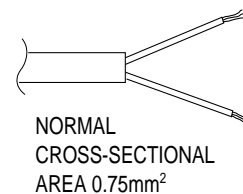


NORMAL CROSS-SECTIONAL AREA	Grade					
	5k~9k	12k	14K~18k	24k~28k	30k, 32k	36k, 38k
	1.0	1.0	1.5	2.5	2.5	5.5
Unit(A)	Indoor	Indoor	Indoor	Indoor	Outdoor	Outdoor
Cable Type(B)	H05VV-F	H05VV-F	H05VV-F	H05VV-F	H05RN-F	H05RN-F

The power connecting cable connected to the indoor and outdoor unit should be complied with the following specifications (Type "B" approved by HAR or SAA).



NORMAL CROSS-SECTIONAL AREA	Grade		
	5k~12k	14k~18k	24k~28k
	1.0	1.5	2.5
Cable Type(B)	H07RN-F	H07RN-F	H07RN-F





### Connect the cable to the outdoor unit

Remove the control cover from the unit by loosening the screw.

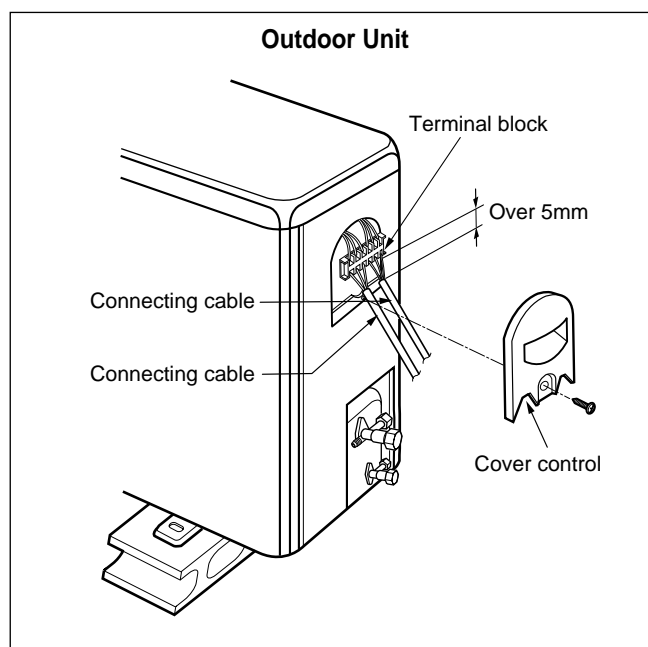
Connect the wires to the terminals on the control board individually.

Secure the cable onto the control board with the cord clamp.

Refix the control cover to the original position with the screw.

Use a recognized circuit breaker "A" between the power source and the unit.  
A disconnecting device to adequately disconnect all supply lines must be fitted.

Circuit Breaker (A)	Grade				
	5k~14k	18k	24k~28k	30k, 32k	36k, 38k
	15	20	30	30	40



### ⚠ CAUTION

After the confirmation of the above conditions, prepare the wiring as follows:

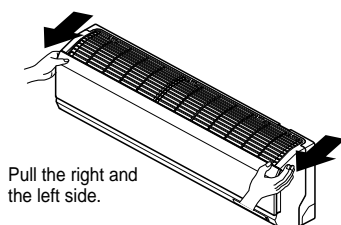
- 1) Never fail to have an individual power circuit specifically for the air conditioner. As for the method of wiring, be guided by the circuit diagram posted on the inside of control cover.
- 2) The screw which fasten the wiring in the casing of electrical fittings are liable to come loose from vibrations to which the unit is subjected during the course of transportation. Check them and make sure that they are all tightly fastened. (If they are loose, it could cause burn-out of the wires.)
- 3) Specification of power source.
- 4) Confirm that electrical capacity is sufficient.
- 5) See to that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
- 6) Confirm that the cable thickness is as specified in the power source specification.  
(Particularly note the relation between cable length and thickness. (Refer to page 24))
- 7) Always install an earth leakage circuit breaker in a wet or moist area.
- 8) The following would be caused by voltage drop.
  - Vibration of a magnetic switch, which will damage the contact point, fuse breaking, disturbance of the normal function of the overload.
- 9) The means for disconnection from a power supply shall be incorporated in the fixed wiring and have an air gap contact separation of at least 3mm in each active(phase) conductors.

# Checking the drainage and forming the pipings

## Checking the drainage

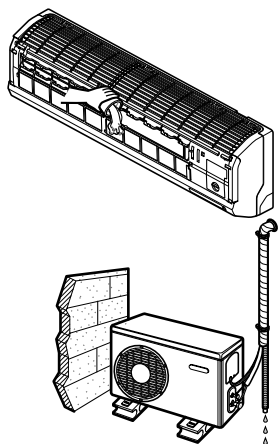
### To remove the front panel from the indoor unit.

- Set the air direction louvers up-and-down to the position(horizontally) by hand.
- Remove the securing screws that retain the front panel. Pull the lower left and right sides of the grille toward you and lift it off.



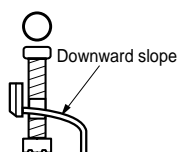
### To check the drainage.

- Pour a glass of water on the evaporator.
- Ensure the water flows through the drain hose of the indoor unit without any leakage and goes out the drain exit.

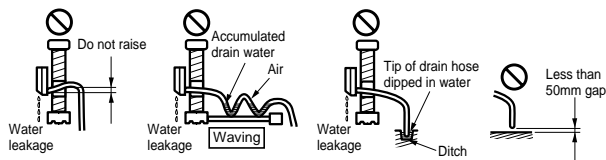


## Drain piping

- The drain hose should point downward for easy drain flow.



- Do not make drain piping.



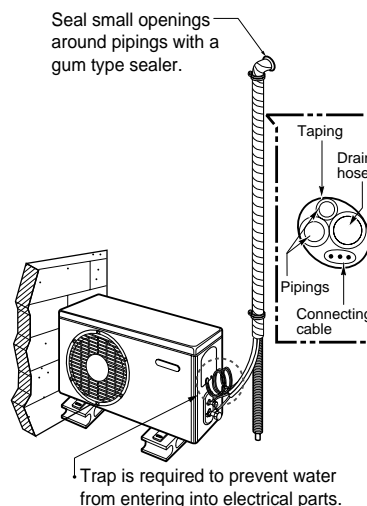
## Form the piping

### Form the piping by wrapping the connecting portion of the indoor unit with insulation material and secure it with two kinds of vinyl tapes.

- If you want to connect an additional drain hose, the end of the drain outlet should be routed above the ground. Secure the drain hose appropriately.

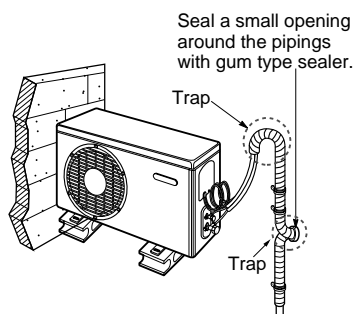
### In cases where the outdoor unit is installed below the indoor unit perform the following.

- Tape the piping, drain hose and connecting cable from down to up.
- Secure the tapped piping along the exterior wall using saddle or equivalent.



### In cases where the Outdoor unit is installed above the Indoor unit perform the following.

- Tape the piping and connecting cable from down to up.
- Secure the taped piping along the exterior wall. Form a trap to prevent water entering the room.
- Fix the piping onto the wall by saddle or equivalent.



# AIR PURGING

## Air purging

Air and moisture remaining in the refrigerant system have undesirable effects as indicated below.

- Pressure in the system rises.
- Operating current rises.
- Cooling(or heating) efficiency drops.
- Moisture in the refrigerant circuit may freeze and block capillary tubing.
- Water may lead to corrosion of parts in the refrigeration system.

Therefore, the indoor unit and tubing between the indoor and outdoor unit must be leak tested and evacuated to remove any noncondensables and moisture from the system.

## Air purging with vacuum pump

### Preparation

- Check that each tube(both liquid and gas side tubes) between the indoor and outdoor units have been properly connected and all wiring for the test run has been completed. Remove the service valve caps from both the gas and the liquid side on the outdoor unit. Note that both the liquid and the gas side service valves on the outdoor unit are kept closed at this stage.

### Leak test

- Connect the manifold valve(with pressure gauges) and dry nitrogen gas cylinder to this service port with charge hoses.

### ⚠ CAUTION

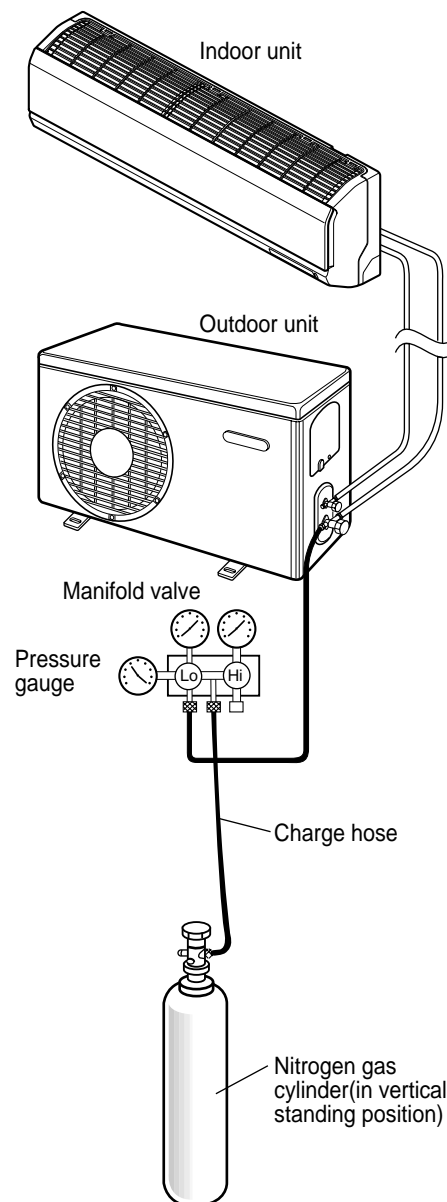
Be sure to use a manifold valve for air purging. If it is not available, use a stop valve for this purpose. The "Hi" knob of the manifold valve must always be kept close.

- Pressurize the system to no more than 150 P.S.I.G. with dry nitrogen gas and close the cylinder valve when the gauge reading reached 150 P.S.I.G. Next, test for leaks with liquid soap.

### ⚠ CAUTION

To avoid nitrogen entering the refrigerant system in a liquid state, the top of the cylinder must be higher than its bottom when you pressurize the system. Usually, the cylinder is used in a vertical standing position.

- Do a leak test of all joints of the tubing(both indoor and outdoor) and both gas and liquid side service valves. Bubbles indicate a leak. Be sure to wipe off the soap with a clean cloth.
- After the system is found to be free of leaks, relieve the nitrogen pressure by loosening the charge hose connector at the nitrogen cylinder. When the system pressure is reduced to normal, disconnect the hose from the cylinder.



## Soap water method

- (1) Remove the caps from the 2-way and 3-way valves.
- (2) Remove the service-port cap from the 3-way valve.
- (3) To open the 2-way valve turn the valve stem counter-clockwise approximately 90°, wait for about 2~3 sec, and close it.
- (4) Apply a soap water or a liquid neutral detergent on the indoor unit connection or outdoor unit connections by a soft brush to check for leakage of the connecting points of the piping.
- (5) If bubbles come out, the pipes have leakage.

## Evacuation

- Connect the charge hose end described in the preceding steps to the vacuum pump to evacuate the tubing and indoor unit.  
Confirm the "Lo" knob of the manifold valve is open. Then, run the vacuum pump.  
The operation time for evacuation varies with tubing length and capacity of the pump. The following table shows the time required for evacuation.

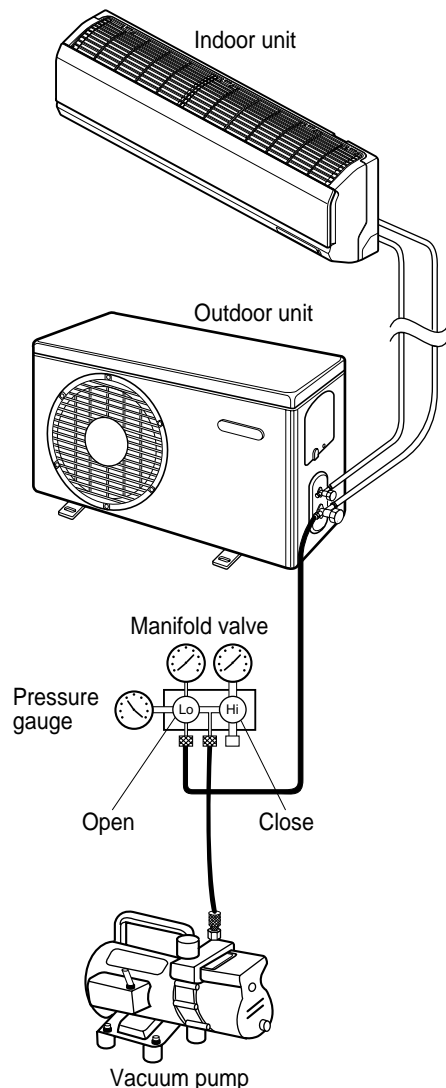
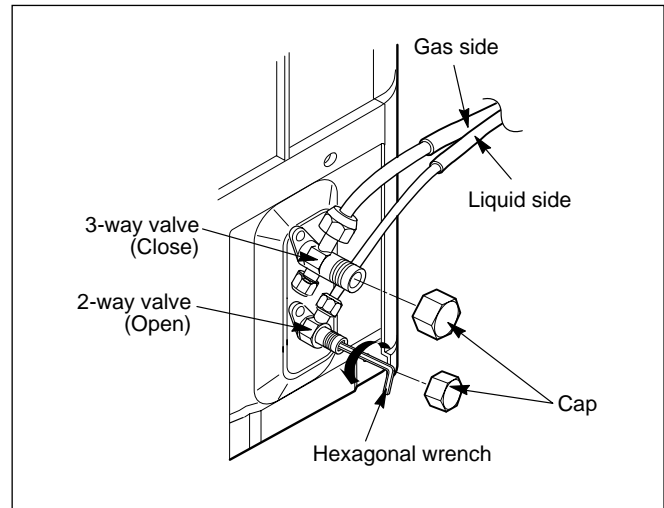
Required time for evacuation when 30 gal/h vacuum pump is used	
If tubing length is less than 10m (33 ft)	if tubing length is longer than 10m (33 ft)
10 min. or more	15 min. or more

- When the desired vacuum is reached, close the "Lo" knob of the manifold valve and stop the vacuum pump.

## Finishing the job

- With a service valve wrench, turn the valve stem of liquid side valve counter-clockwise to fully open the valve.
- Turn the valve stem of gas side valve counter-clockwise to fully open the valve.
- Loosen the charge hose connected to the gas side service port slightly to release the pressure, then remove the hose.
- Replace the flare nut and its bonnet on the gas side service port and fasten the flare nut securely with an adjustable wrench. This process is very important to prevent leakage from the system.
- Replace the valve caps at both gas and liquid side service valves and fasten them tight.

This completes air purging with a vacuum pump.  
The air conditioner is now ready to test run.

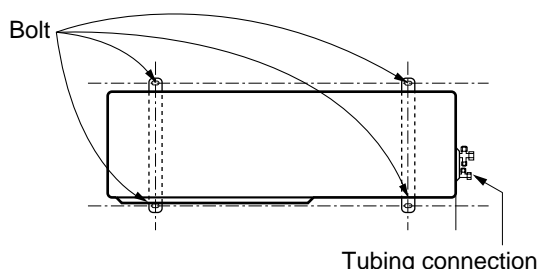


# TEST RUNNING

1. Check that all tubing and wiring have been properly connected.
2. Check that the gas and liquid side service valves are fully open.

## Settlement of outdoor unit

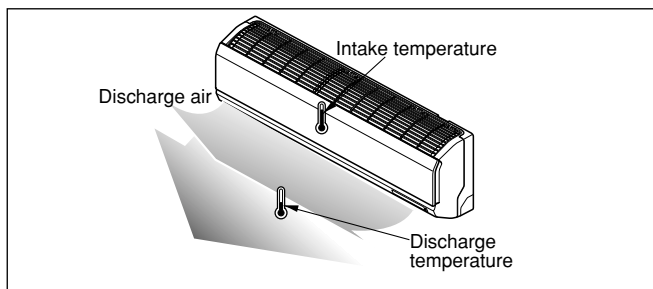
- Anchor the outdoor unit with a bolt and nut(ø10mm) tightly and horizontally on a concrete or rigid mount.
- When installing on the wall, roof or rooftop, anchor the mounting base securely with a nail or wire assuming the influence of wind and earthquake.
- In the case when the vibration of the unit is conveyed to the hose, secure the unit with an anti-vibration bushing.



## Evaluation of the performance

Operate unit for 15~20 minutes, then check the system refrigerant charge:

1. Measure the pressure of the gas side service valve.
2. Measure the temperature of the intake and discharge of air.
3. Ensure the difference between the intake temperature and the discharge is more than 8°C(46°F) (Cooling) or (Heating).



4. For reference; the gas side pressure of optimum condition is as below.(Cooling)

Refrigerant	Outside ambient TEMP.	The pressure of the gas side service valve.
R-22	35°C (95°F)	4~5kg/cm <sup>2</sup> G(56.8~71.0 P.S.I.G.)
R-410A	35°C (95°F)	8.5~9.5kg/cm <sup>2</sup> G(120~135 P.S.I.G.)

**NOTE:** If the actual pressure is higher than shown, the system is most likely over-charged, and charge should be removed. If the actual pressure are lower than shown, the system is most likely undercharged, and charge should be added.

The air conditioner is now ready for use.

## PUMP DOWN

**This is performed when the unit is to be relocated or the refrigerant circuit is serviced.**

Pump Down means collecting all refrigerant in the outdoor unit without loss in refrigerant gas.

### CAUTION:

Be sure to perform Pump Down procedure with the unit cooling mode.

### Pump Down Procedure

1. Connect a low-pressure gauge manifold hose to the charge port on the gas side service valve.
2. Open the gas side service valve halfway and purge the air from the manifold hose using the refrigerant gas.
3. Close the liquid side service valve(all the way in).
4. Turn on the unit's operating switch and start the cooling operation.
5. When the low-pressure gauge reading becomes 1 to 0.5kg/cm<sup>2</sup> G(14.2 to 7.1 P.S.I.G.), fully close the gas side valve stem and then quickly turn off the unit. At that time, Pump Down has been completed and all refrigerant gas will have been collected in the outdoor unit.

Power-Failure Compensation Function User Selection ON/OFF

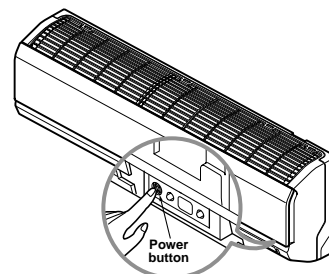
### 1) Operation Sequence

- ① Press the forced switch until BUZZER sounds 2 times (beep~beep~).
- ② Release the forced switch if BUZZER sounds.
- ③ Check the function selection ON/OFF with the operation LED.

### 2) Checking function-selection ON/OFF

- Function-Selection ON: One time blinking of operation LED would repeat 4 times.

- Function-Selection OFF: Two times blinking of operation LED would repeat 4 times.



# Operation

## Function of Controls

### • DISPLAY

#### 1) C/O Model

##### Operation Indicator

- ON while in appliance operation, OFF while in appliance pause.
- Flashing while in disconnection or short in Thermistor. (3 sec off / 0.5 sec on)

##### Timer Indicator

- ON while in timer mode (on/off), OFF when timer mode is completed or canceled.

##### Comp. Running Indicator

- While in appliance operation, ON while in outdoor unit compressor running, OFF while in compressor off.

#### 2) H/P Model

##### Operation Indicator

- ON while in appliance operation, OFF while in appliance pause.
- Flashing while in disconnection or short in Thermistor. (3 sec off / 0.5 sec on)

##### Timer Indicator

- ON while in timer mode (on/off), OFF when timer mode is completed or canceled.

##### Defrost Indicator

- OFF except when hot start during heating mode operation or while in defrost control.

### ■ Cooling Mode Operation

- When the intake air temperature reaches 0.5°C below the setting temp, the compressor and the outdoor fan stop.
- When it reaches 0.5°C above the setting temp, they start to operate again.
  - Compressor ON Temp                      ➤ Setting Temp+0.5°C
  - Compressor OFF Temp                    ➤ Setting Temp-0.5°C
- While in compressor running, operating with the airflow speed set by the remote control. While in compressor not running, operating with the low airflow speed regardless of the setting.

### ■ Healthy Dehumidification Mode

- When the dehumidification operation input by the remote control is received, the intake air temperature is detected and the setting temp is automatically set according to the intake air temperature.
  - 26°C ≤ Intake Air Temp                      ➤ 25°C
  - 24°C ≤ Intake Air Temp < 26°C            ➤ Intake Air Temp - 1°C
  - 18°C ≤ Intake Air Temp < 24°C           ➤ Intake Air Temp - 0.5°C
  - Intake Air Temp < 18°C                      ➤ 18°C

- While in compressor off, the indoor fan repeats low airflow speed and pause.
- While the intake air temp is between compressor on temp. and compressor off temp., 10-min dehumidification operation and 4-min compressor off repeat.  
Compressor ON Temp.    ➤ Setting Temp.+0.5°C  
Compressor OFF Temp.    ➤ Setting Temp.-0.5°C
- In 10-min dehumidification operation, the indoor fan operates with the low airflow speed.

## ■ Heating Mode Operation

- When the intake air temp reaches +3°C above the setting temp, the compressor is turned off. When reaches the setting temp, the compressor is turned on.  
Compressor ON Temp.    ➤ Setting Temp.  
Compressor OFF Temp.    ➤ Setting Temp.+3°C
- While in compressor on, the indoor fan is off when the indoor pipe temp. is below 20°C, when above 28°C , it operates with the low or setting airflow speed. When the indoor pipe temp is between 20°C and 28°C, it operates with Super-Low(while in sleep mode, with the medium airflow speed).
- While in compressor off, the indoor fan is off when the indoor pipe temp is below 33°C, when above 35°C , it operates with the low airflow speed.
- If overloaded while in heating mode operation, in order to prevent the compressor from OLP operation, the outdoor fan is turned on/off according to the indoor pipe temp.
- While in defrost control, both of the indoor and outdoor fans are turned off.

## ■ Defrost Control

- While in heating mode operation in order to protect the evaporator pipe of the outdoor unit from freezing, reversed to cooling cycle to defrost the evaporator pipe of the outdoor unit.
- After 40 min heating mode operation, at 4 min interval, whether to carry out defrost control or not and the time of defrost control are determined according to the following conditions.
  - 1) While in heating mode operation, the maximum of the indoor pipe temperature is measured and it is compared with the present indoor pipe temperature to get the difference of the indoor pipe temperatures (=the maximum temperature of indoor pipe ? the present temperature of indoor pipe), according to which, whether to carry out defrost control or not is determined.
  - 2) According to the need of defrost control shown above and the elapsed time of heating mode operation at that moment, the defrost control time is determined.
  - 3) When the determined time of defrost control is below 7 min, heating mode operation continues without carrying out defrost control. According to the procedure stated above, the determination is made again. When the defrost control time is 7 min or longer, defrost control is then carried out.
- While in defrost control, the minimum temp of the indoor pipe is measured and it is compared with the present temp of the indoor pipe to get the difference of the indoor pipe temperatures (=the present temperature of the indoor pipe ? the minimum temperature of the indoor pipe). When the difference is 5°C or higher, defrost control is completed and heating mode operation is carried out.
- While in defrost control, if the defrost time determined before the start of defrost control is completed, defrost control stops and heating mode operation is carried out regardless of the above condition.
- When the indoor pipe temp is 42°C or above, defrost control is not carried out even if the condition is one of the defrost conditions above.
- While in defrost control, the compressor is on and the indoor fan, the outdoor fan, and the 4 way valve are off.

## ■ Airflow Speed Selection

- The airflow speed of the indoor fan is set to high, medium, low, or chaos (auto) by the input of the airflow speed selection key on the remote control.

## ■ Sleep Timer Operation

- When the sleep time is reached after <1,2,3,4,5,6,7,0(cancel) hr> is input by the remote control while in appliance operation, the operation of the appliance stops.
- While the appliance is on pause, the sleep timer mode cannot be input.
- While in cooling mode operation, 30 min later since the start of the sleep timer, the setting temperature increases by 1°C. After another 30 min elapse, it increases by 1°C again.
- When the sleep timer mode is input while in cooling cycle mode, the airflow speed of the indoor fan is set to the low.
- When the sleep timer mode is input while in heating cycle mode, the airflow speed of the indoor fan is set to the medium.

## ■ Chaos Natural Wind Mode

- When the Chaos Natural Wind mode is selected and then operated, the high, medium, or low speed of the airflow mode is operated for 2~15 sec. randomly by the Chaos Simulation.

## ■ Jet Cool Mode Operation (C/O Model)

- If the Jet Cool key is input at any operation mode while in appliance operation, the Jet Cool mode operates.
- In the Jet Cool mode, the indoor fan is operated at super-high speed for 30 min at cooling mode operation.
- In the Jet Cool mode operation, the room temperature is controlled to the setting temperature, 18°C
- When the sleep timer mode is input while in the Jet Cool mode operation, the Jet Cool mode has the priority.
- When the Jet Cool key is input, the upper/lower vanes are reset to those of the initial cooling mode and then operated in order that the air outflow could reach further.

## ■ Jet Cool Mode Operation (H/P Model)

- While in heating mode or Fuzzy operation, the Jet Cool key cannot be input. When it is input while in the other mode operation (cooling, dehumidification, ventilation), the Jet Cool mode is operated.
- In the Jet Cool mode, the indoor fan is operated at super-high speed for 30 min at cooling mode operation.
- In the Jet Cool mode operation, the room temperature is controlled to the setting temperature, 18°C.
- When the sleep timer mode is input while in the Jet Cool mode operation, the Jet Cool mode has the priority.
- When the Jet Cool key is input, the upper/lower vanes are reset to those of the initial cooling mode and then operated in order that the air outflow could reach further.

## ■ Forced Operation

- Operation procedures when the remote control can't be used.
- The operation will be started if the power button is pressed.
- If you want to stop operation, re-press the button.

	Cooling Model	Heat pump Model		
		Room Temp. $\geq 24^{\circ}\text{C}$	$21^{\circ}\text{C} \leq \text{Room Temp.} < 24^{\circ}\text{C}$	Room Temp. $< 21^{\circ}\text{C}$
Operating mode	Cooling	Cooling	Healthy Dehumidification	Heating
Indoor FAN Speed	High	High	High	High
Setting Temperature	22°C	22°C	23°C	24°C

- While in forced operation, the key input by the remote control has no effect and the buzzer sounds 10 times to indicate the forced operation.



### ■ Test operation

- During the TEST OPERATION, the unit operates in cooling mode at high speed fan, regardless of room temperature and resets in  $18\pm1$  minutes.
- During test operation, if remote controller signal is received, the unit operates as remote controller sets.  
If you want to use this operation, open the front panel upward and Press the power button let it be pressed for about 3 seconds.
- If you want to stop the operation, re-press the button.

### ■ Auto restart

- In case the power comes on again after a power failure, Auto Restarting Operation is the function to operate procedures automatically to the previous operating conditions.

### ■ Protection of the evaporator pipe from frosting

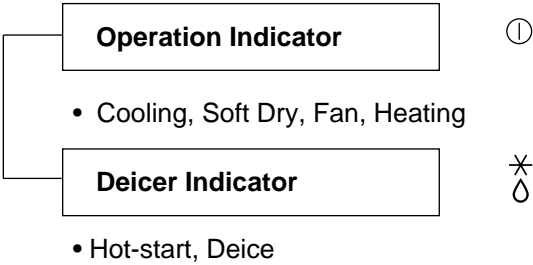
- If the indoor pipe temp is below  $0^{\circ}\text{C}$  in 7 min. after the compressor operates without any pause while in cooling cycle operation mode, the compressor and the outdoor fan are turned off in order to protect the indoor evaporator pipe from frosting.
- When the indoor pipe temp is  $7^{\circ}\text{C}$  or higher after 3 min. pause of the compressor, the compressor and the outdoor fan is turned on according to the condition of the room temperature.

### ■ Buzzer Sounding Operation

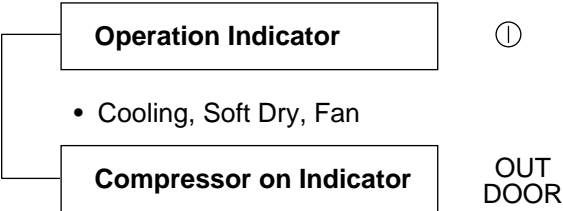
- When the appliance-operation key is input by the remote control, the short "beep-beep-" sounds.
- When the appliance-pause key is input by the remote control, the long "beep—" sounds.

Display Function

1. Heating Model



2. Cooling Model

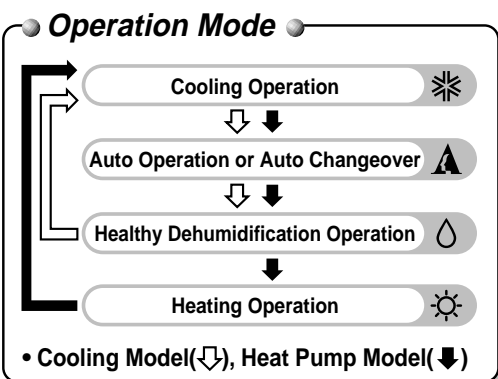
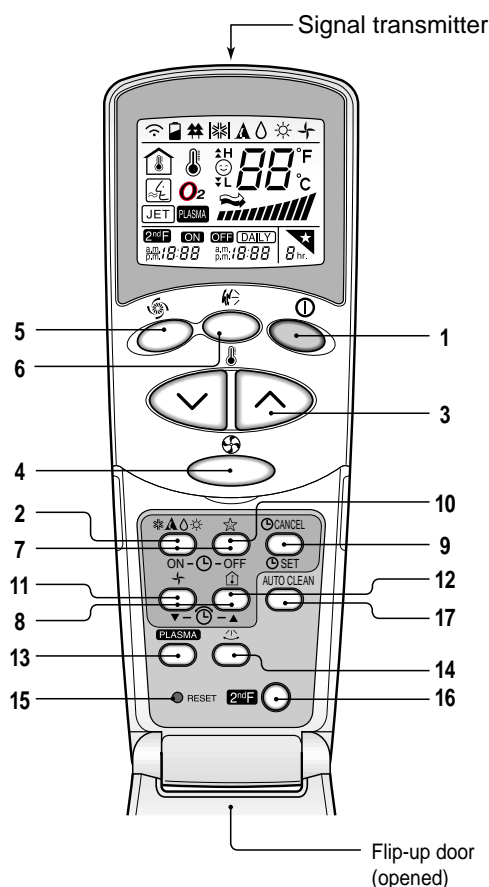


Self-diagnosis Function

Error Code	Error Display LED (Indoor body operation LED)	Error contents	SVC check point
1	<p>(once)</p> <p>3sec 3sec 3sec</p>	<ul style="list-style-type: none"><li>Indoor room temperature thermistor open/short</li><li>Indoor pipe temperature thermistor open/short.</li></ul>	<ul style="list-style-type: none"><li>Indoor Thermistor assembly check</li></ul>

## Remote Control Operations

The controls will look like the following.



### 1. START/STOP BUTTON

Operation starts when this button is pressed and stops when the button is pressed again.



### 2. OPERATION MODE SELECTION BUTTON

Used to select the operation mode.



### 3. ROOM TEMPERATURE SETTING BUTTONS

Used to select the room temperature.



### 4. INDOOR FAN SPEED SELECTOR

Used to select fan speed in four steps low, medium, high and CHAOS.



### 5. JET COOL

Used to start or stop the speed cooling. (speed cooling operates super high fan speed in cooling mode.)



### 6. CHAOS SWING BUTTON

Used to stop or start louver movement and set the desired up/down airflow direction.



### 7. ON/OFF TIMER BUTTONS

Used to set the time of starting and stopping operation.

### 8. TIME SETTING BUTTONS

Used to adjust the time.

### 9. TIMER SET/CANCEL BUTTON

Used to set the timer when the desired time is obtained and to cancel the Timer operation.

### 10. SLEEP MODE AUTO BUTTON

Used to set Sleep Mode Auto operation.

### 11. AIR CIRCULATION BUTTON

Used to circulate the room air without cooling or heating.

### 12. ROOM TEMPERATURE CHECKING BUTTON

Used to check the room temperature.

### 13. PLASMA(OPTIONAL)

Used to start or stop the plasma function.

### 14. HORIZONTAL AIRFLOW DIRECTION CONTROL BUTTON (OPTIONAL)

Used to set the desired horizontal airflow direction.

### 15. RESET BUTTON

Used prior to resetting time.

### 16. 2ND F BUTTON

Used prior to using modes printed in blue at the bottom of buttons.

### 17. AUTO CLEAN (OPTIONAL)

Used to set Auto Clean mode.

# Disassembly

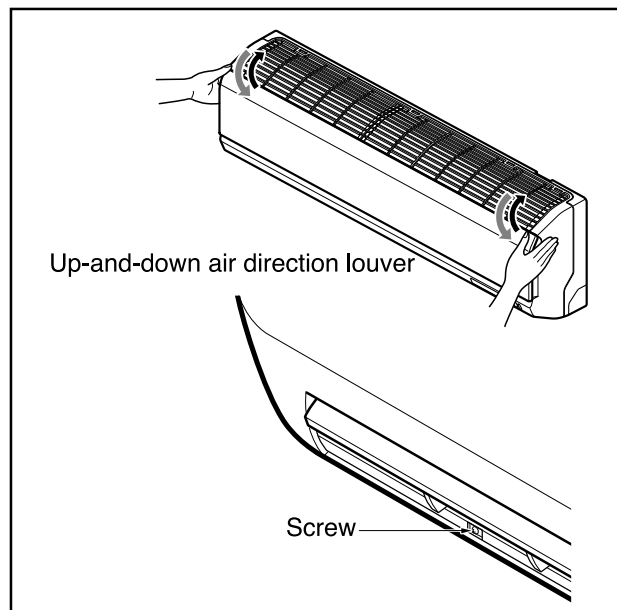
## Indoor Unit

### ▲ WARNING

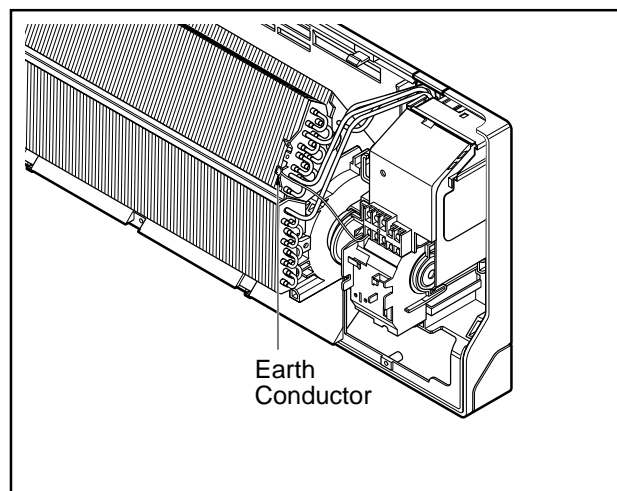
Disconnect the unit from power supply before making any checks.  
Be sure the power switch is set to "OFF".

#### To remove the Grille from the Chassis.

- Set the up-and-down air discharge louver to open position (horizontally) by finger pressure.
- Remove the securing screws.
- To remove the Grille, pull the lower left and right side of the grille toward you (slightly tilted) and lift it straight upward.

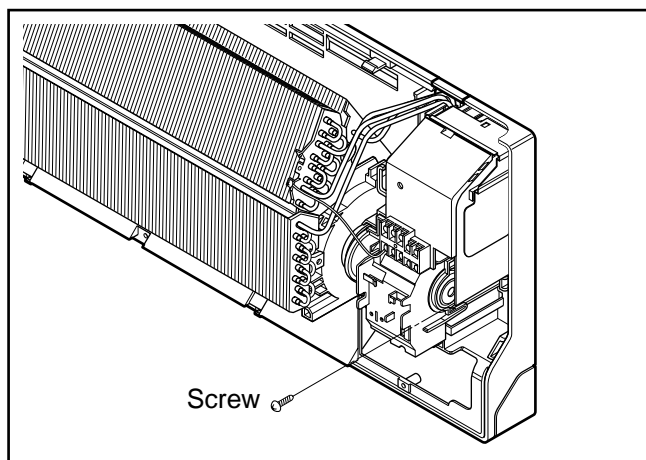


1. Before removing the control box, be sure to take out the wire screwed at the other end.

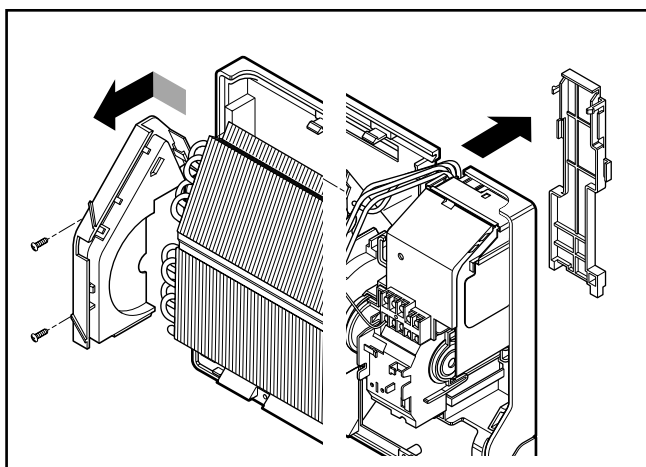


**2. To remove the Control Box.**

- Remove securing screws.
- Pull the control box out from the chassis carefully.

**3. To remove the Discharge Grille.**

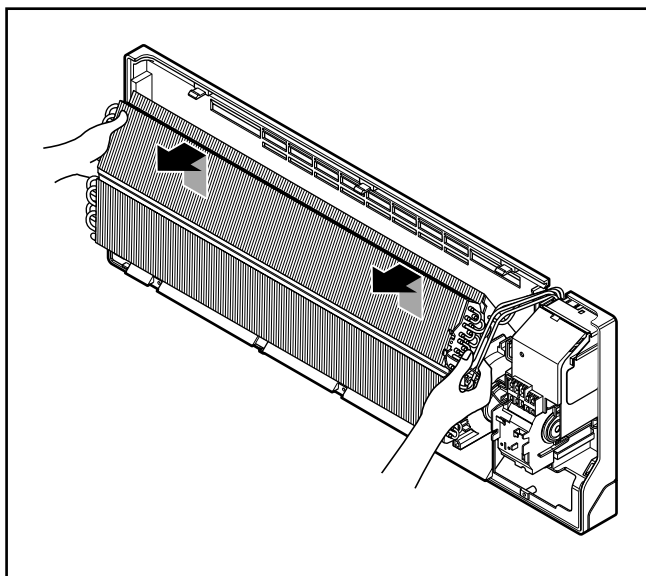
- Unhook the discharge grille and pull the discharge grille out from the chassis carefully.

**4. To remove the Evaporator.**

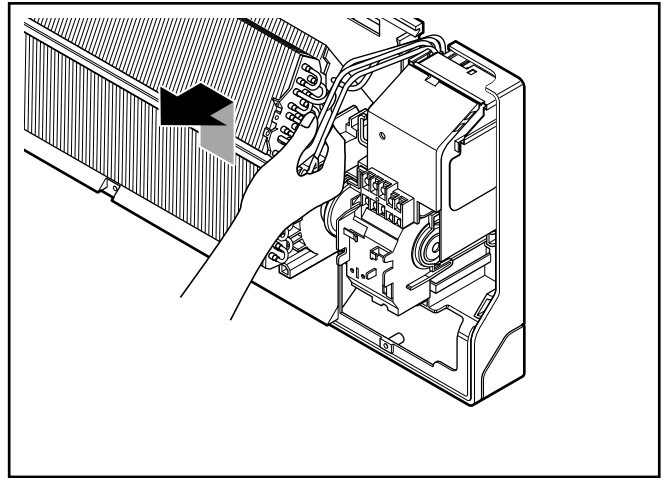
- Remove 3 screws securing the evaporator(at the left 2EA in the Eva Holder, at the right 1EA).

**⚠ CAUTION**

- When repair, do not damage the Caution label.

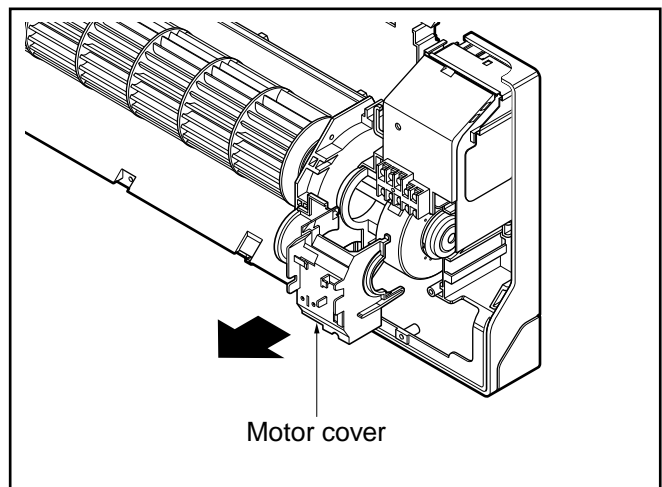


- Unhook the tab on the right inside of the chassis at the same time, slightly pull the evaporator toward you until the tab is clear of the slot.



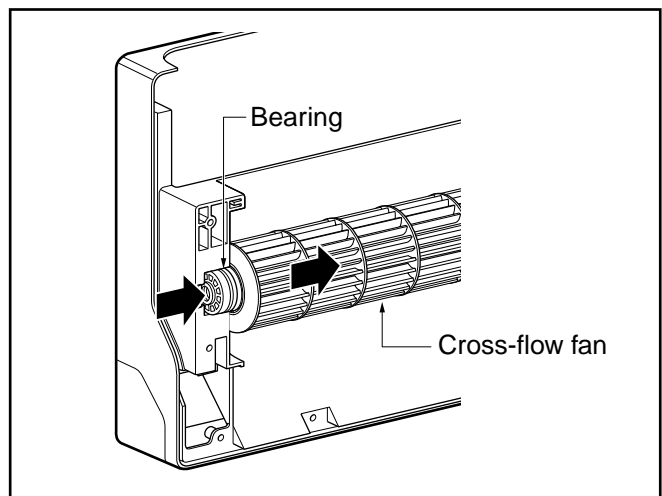
**5. To remove the Motor Cover**

- Remove 2 securing screw.
- Pull the motor cover out from the chassis carefully.



**6. To remove the Cross-Flow Fan**

- Loosen the screw securing the cross-flow fan to the fan motor (do not remove).
- Lift up the right side of the cross-flow fan and the fan motor, separate the fan motor from the cross-flow fan.

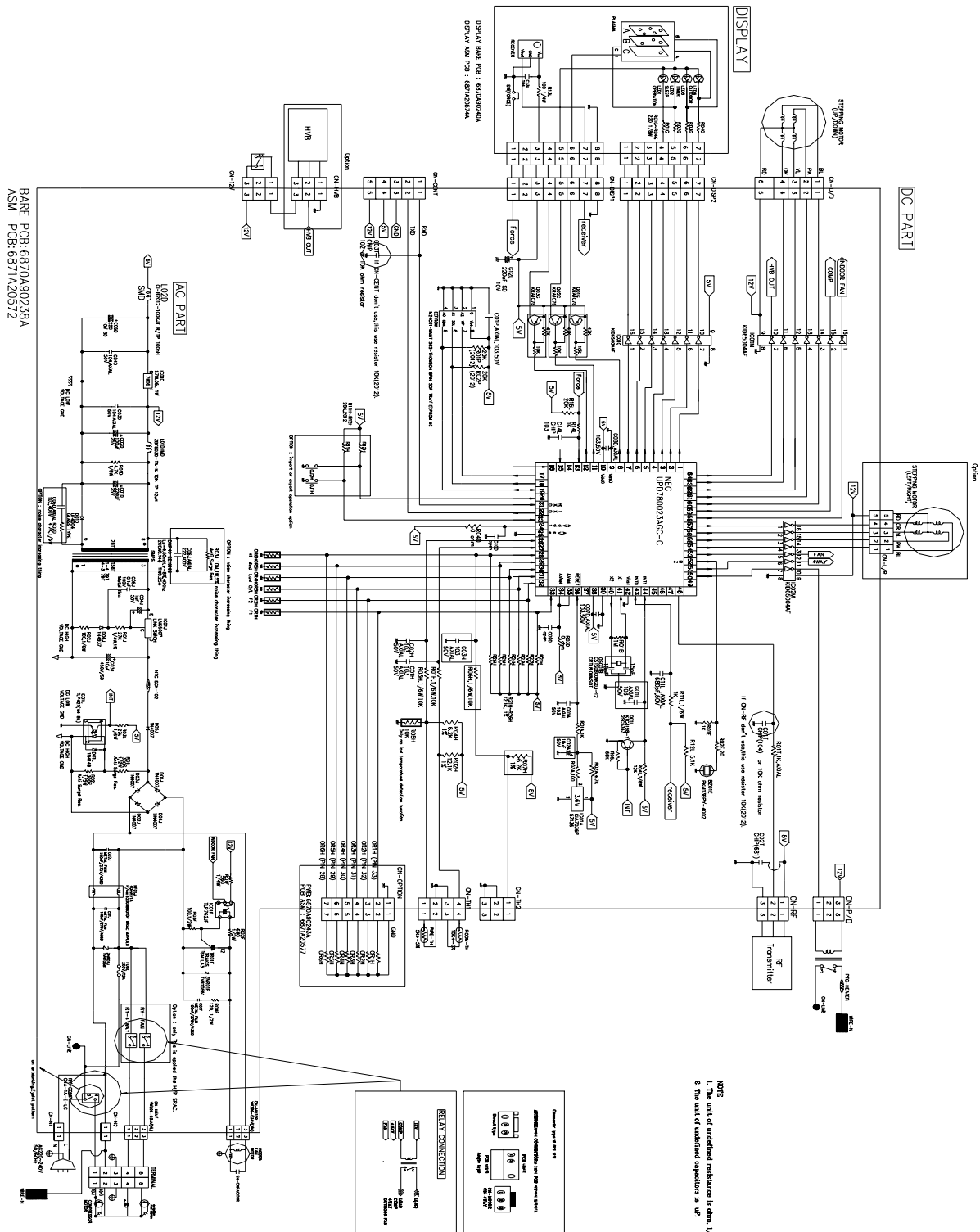


- Remove the left end of the cross-flow fan from the self-aligning bearing.

## Electric Control Device

**NOTE**

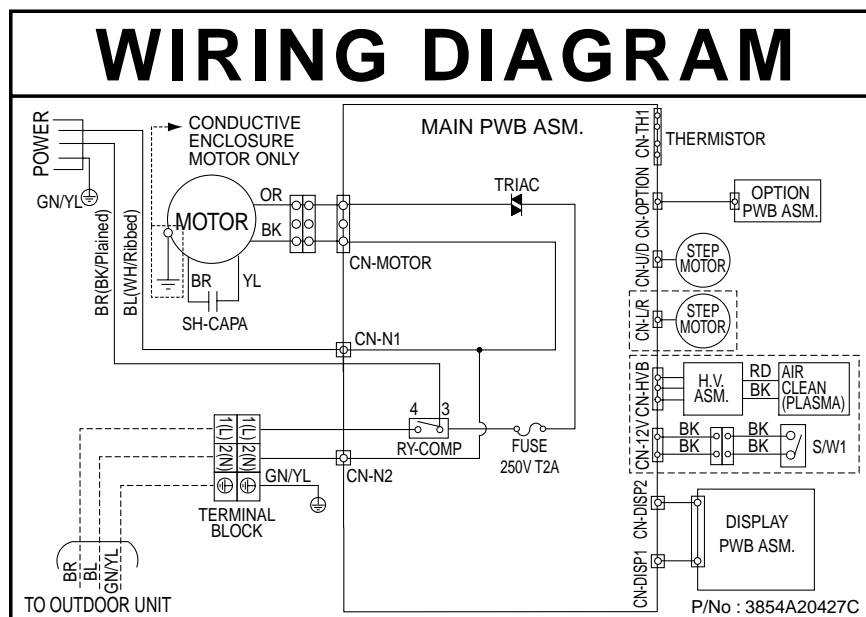
1. The unit of undefined resistance is ohm,  $1/8W$ , 5%
2. The unit of undefined capacitors is  $\mu F$ .



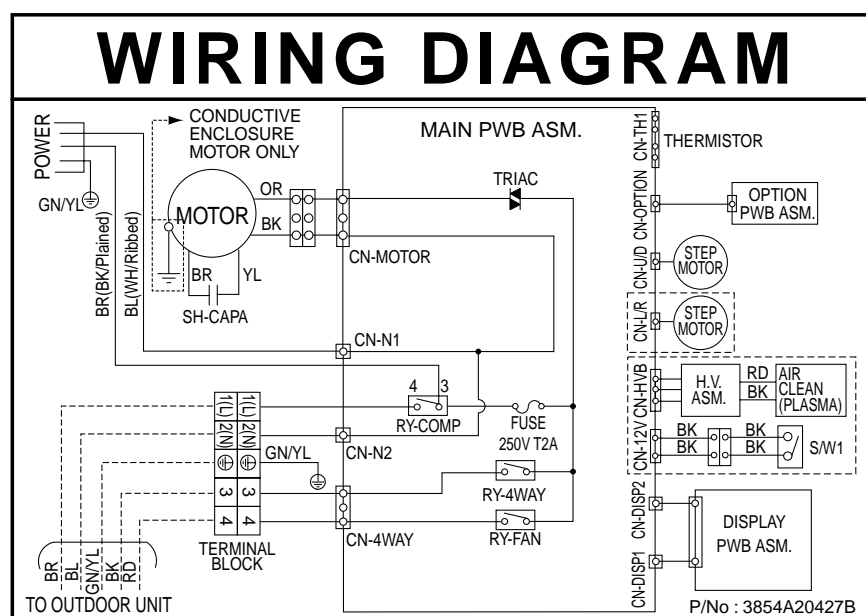
## Wiring Diagram

### Indoor Unit

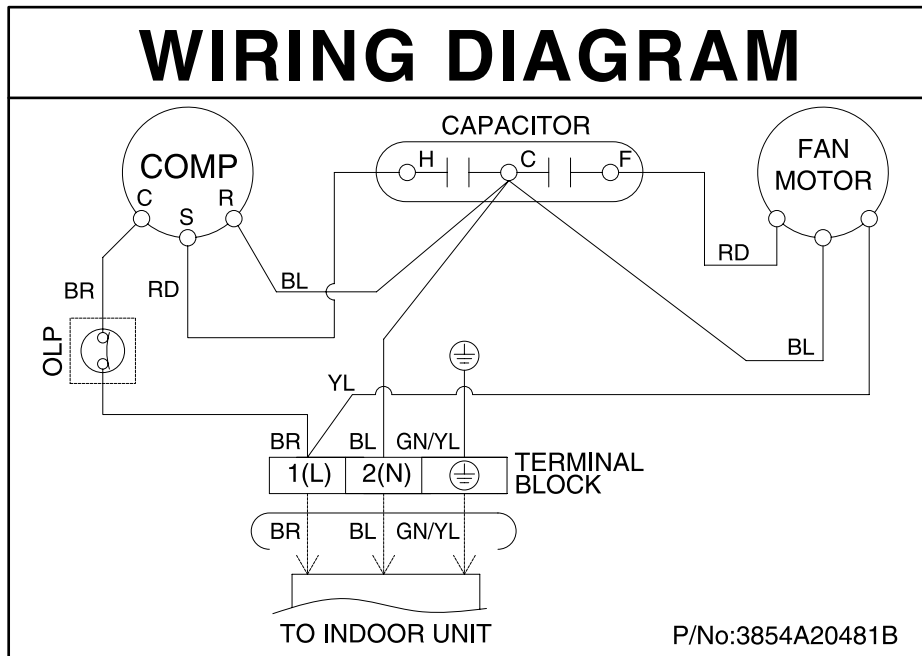
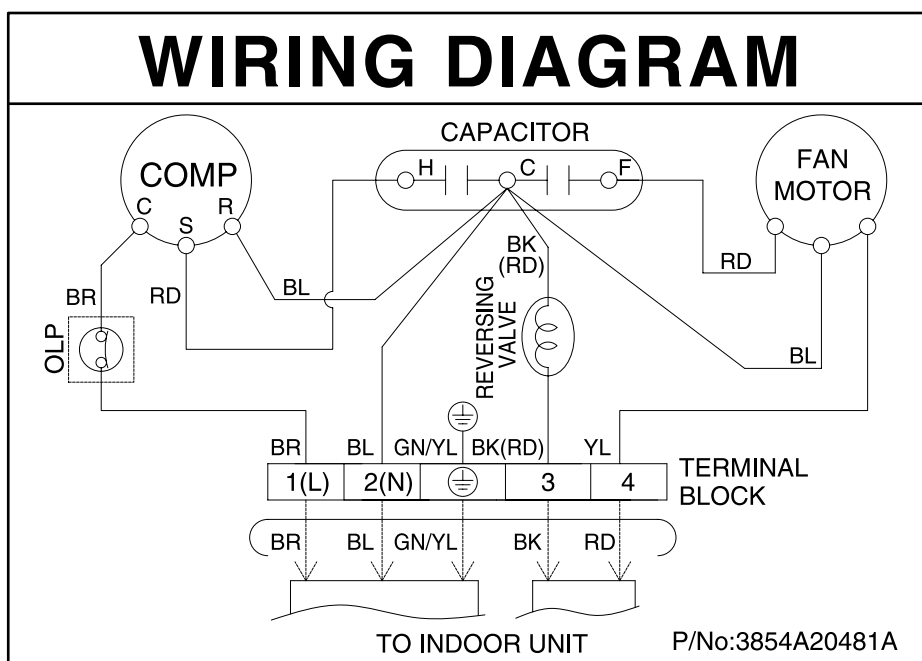
Models: 9k, 12k, 18k, 24k Cooling only Model



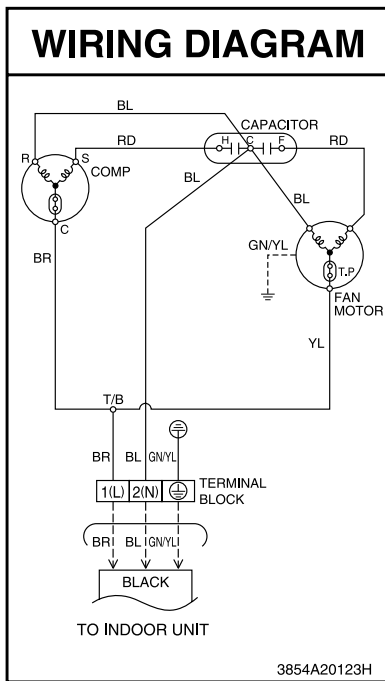
Models: 12k, 18k, 24k Heat pump Model



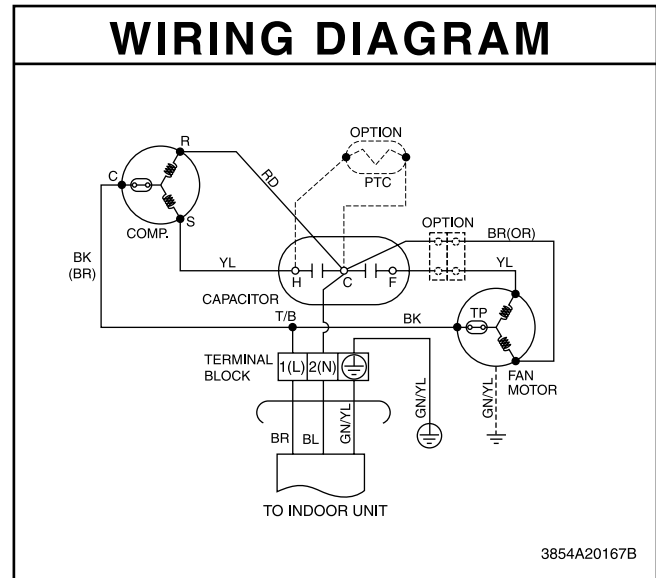


**Outdoor Unit****Models: 9k, 12k Cooling only Model****Models: 12k Heat pump Model**

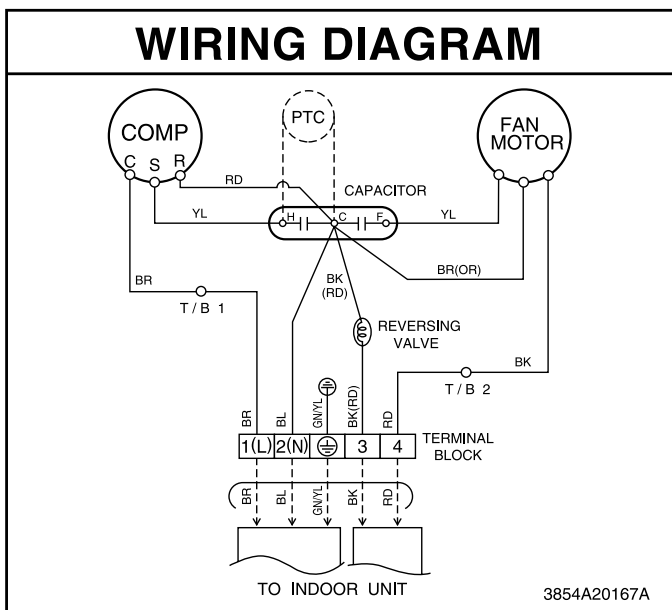
**Models: 18k Cooling only Model**



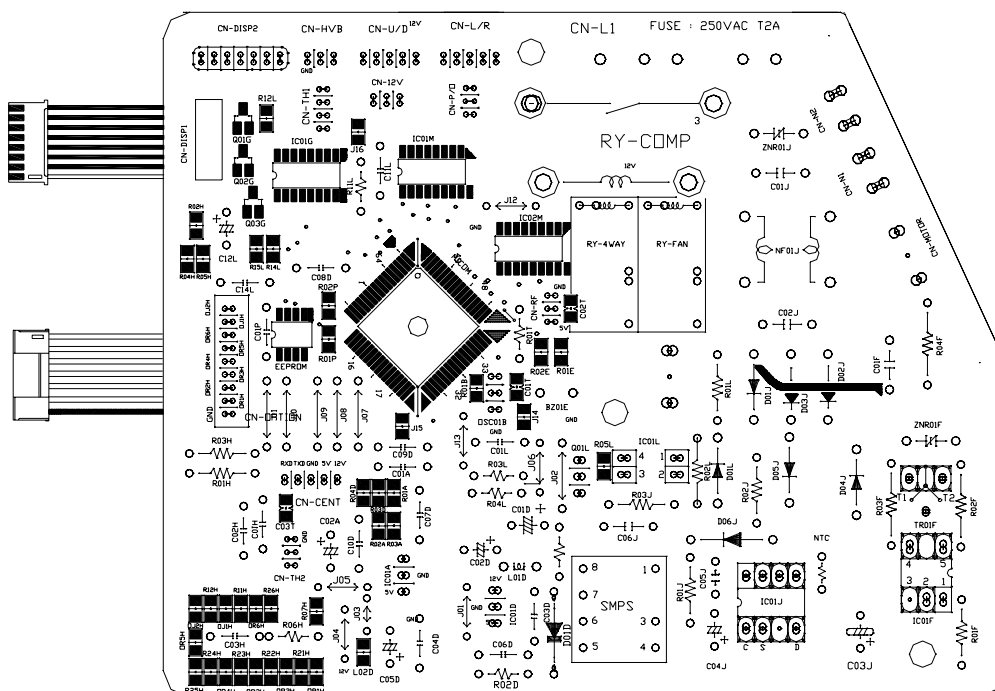
**Models: 24k Cooling only Model**



**Models: 18k, 24k Heat pump Model**

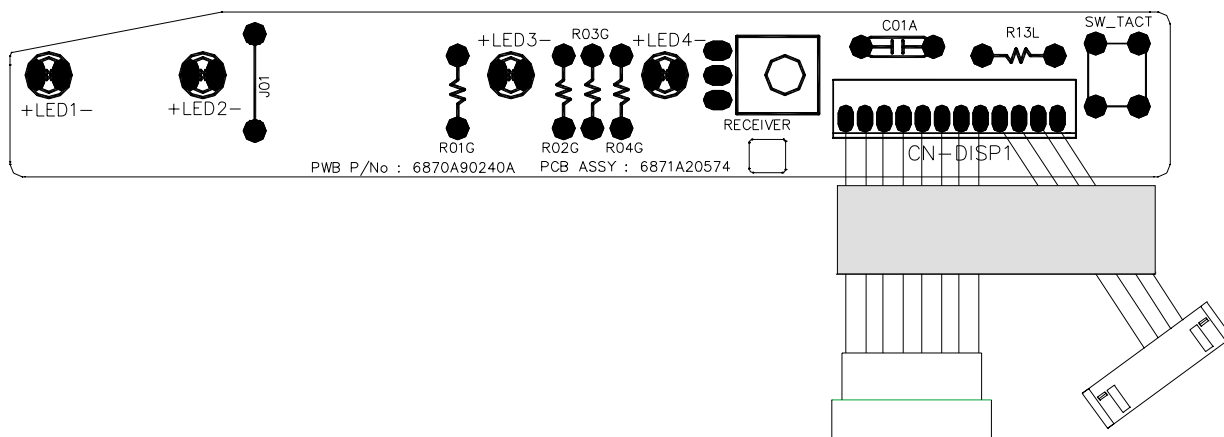


- **TOP VIEW**



## DISPLAY ASSEMBLY

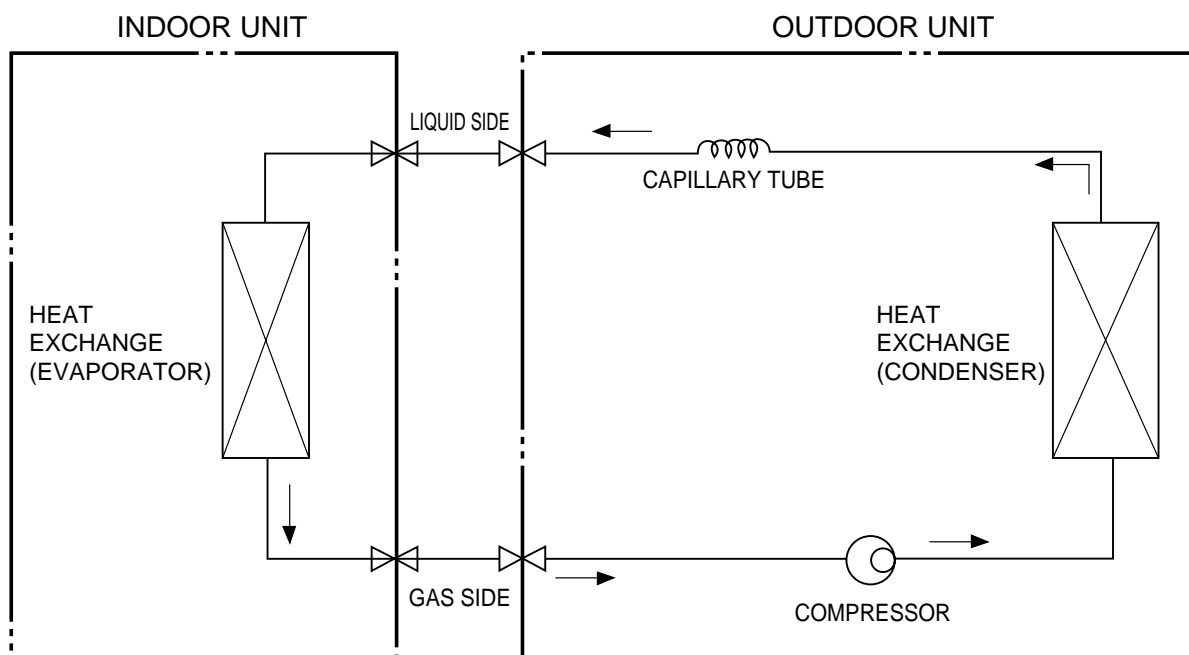
– 6871A20574B



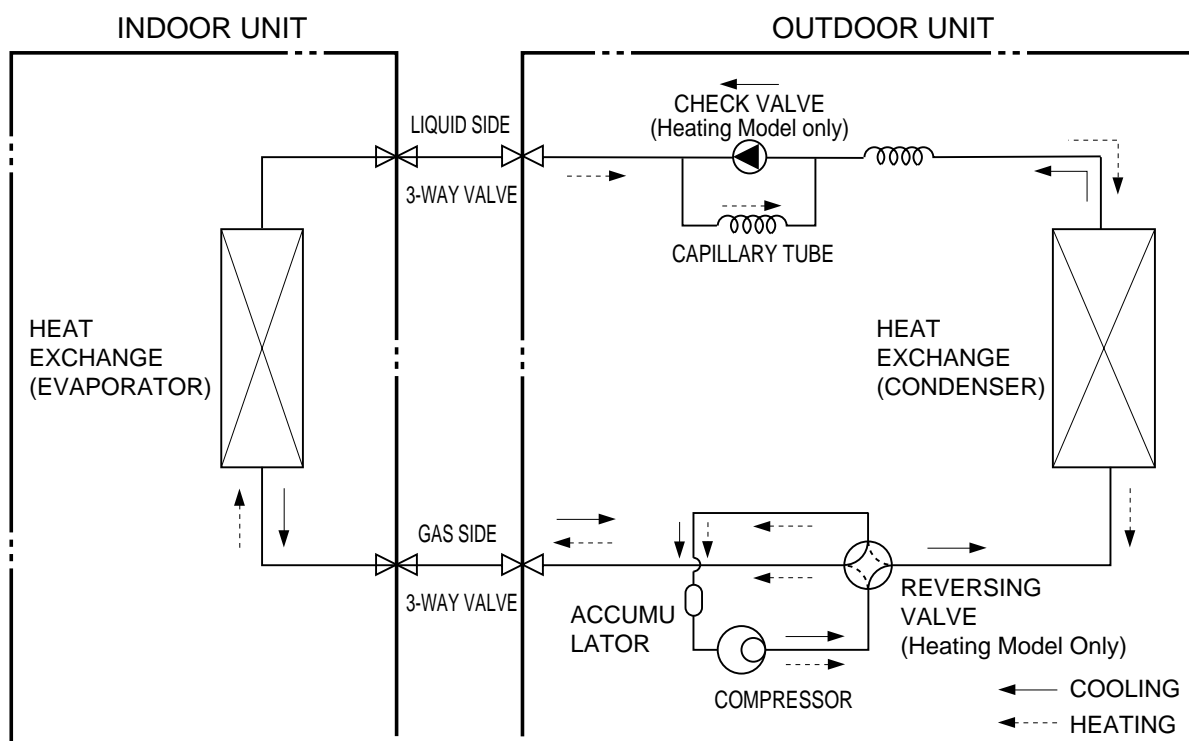
# Troubleshooting Guide

## Refrigeration Cycle Diagram

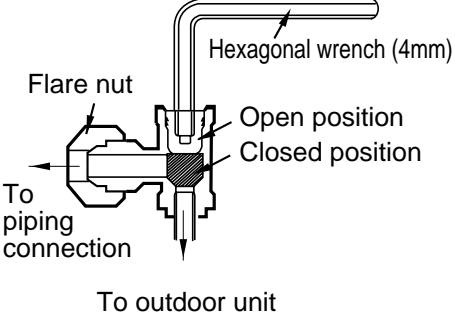
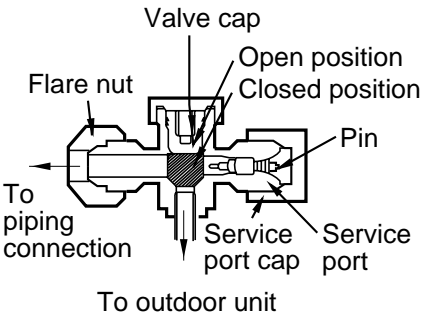
### (1) Cooling Only Models



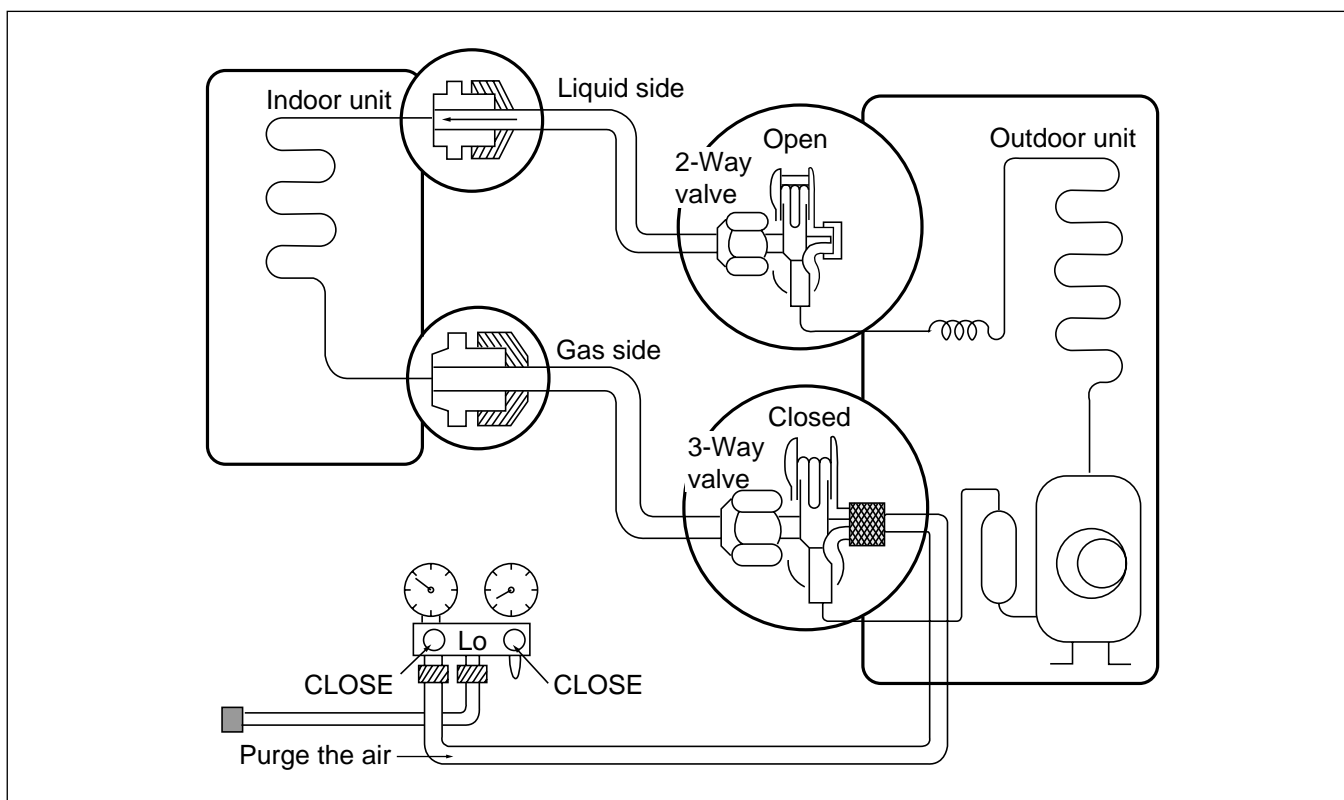
### (2) Cooling & Heating Models



## 2-way, 3-way Valve

		2-way Valve (Liquid Side)	3-way Valve (Gas Side)	
				
Works		Shaft position	Shaft position	Service port
Shipping		Closed (with valve cap)	Closed (with valve cap)	Closed (with cap)
1.	Air purging (Installation)	Open (counter-clockwise)	Closed (clockwise)	Open (push-pin or with vacuum pump)
Operation		Open (with valve cap)	Open (with valve cap)	Closed (with cap)
2.	Pumping down (Transferring)	Closed (clockwise)	Open (counter-clockwise)	Open (connected manifold gauge)
3.	Evacuation (Servicing)	Open	Open	Open (with charging cylinder)
4.	Gas charging (Servicing)	Open	Open	Open (with charging cylinder)
5.	Pressure check (Servicing)	Open	Open	Open (with charging cylinder)
6.	Gas releasing (Servicing)	Open	Open	Open (with charging cylinder)

## Pumping Down



### • Procedure

**(1) Confirm that both the 2-way and 3-way valves are set to the open position.**

- Remove the valve stem caps and confirm that the valve stems are in the raised position.
- Be sure to use a hexagonal wrench to operate the valve stems.

**(2) Operate the unit for 10 to 15 minutes.**

**(3) Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.**

- Connect the charge hose with the push pin to the service port.

**(4) Air purging of the charge hose.**

- Open the low-pressure valve on the charge set slightly to air purge from the charge hose.

**(5) Set the 2-way valve to the closed position.**

**(6) Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 1kg/cm<sup>2</sup>g.**

**(7) Immediately set the 3-way valve to the closed position.**

- Do this quickly so that the gauge ends up indicating 3 to 5kg/cm<sup>2</sup>g.

**(8) Disconnect the charge set, and mount the 2-way and 3-way valve's stem nuts and the service port nut.**

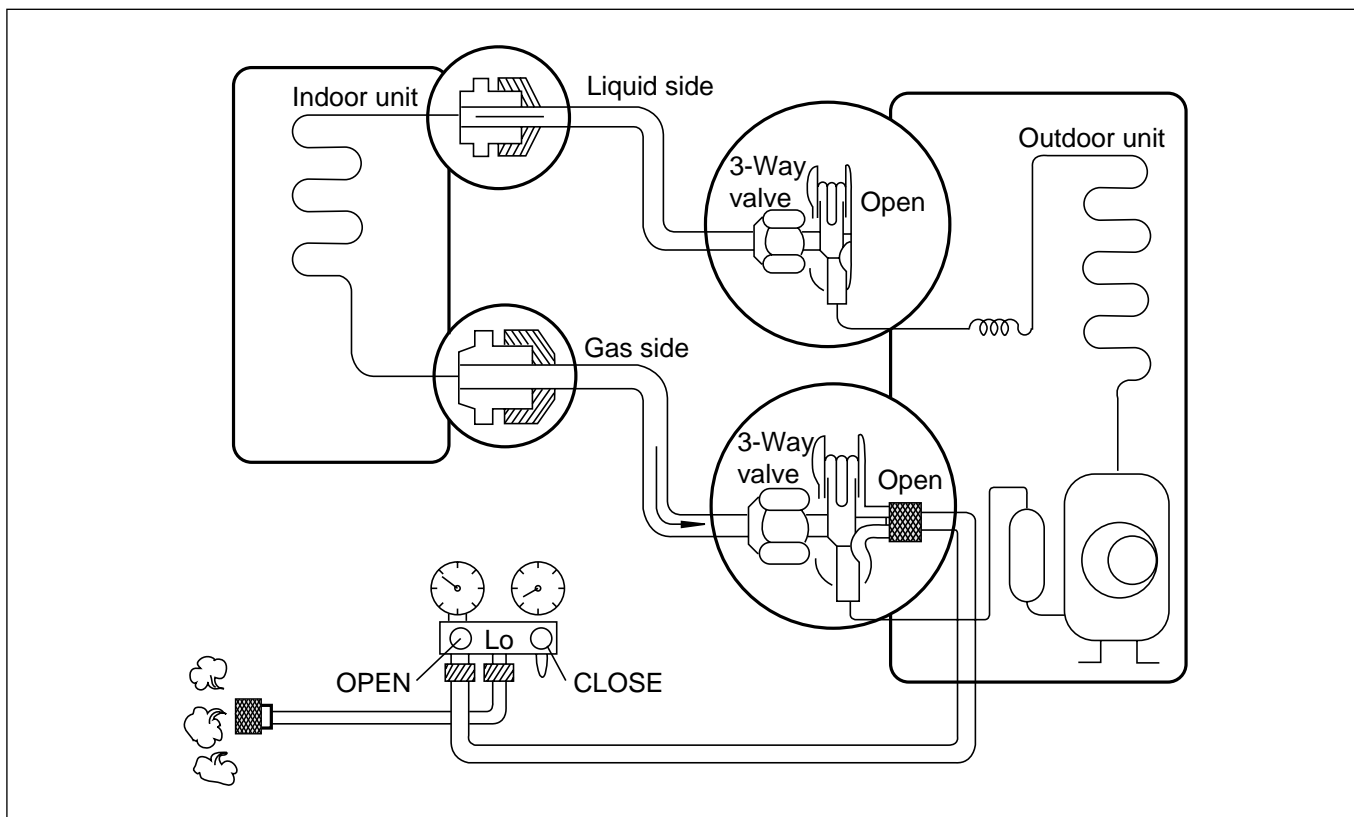
- Use torque wrench to tighten the service port nut to a torque of 1.8 kg.m.
- Be sure to check for gas leakage.

### ▲ CAUTION

Do not use the existing charge set for R-22. It is necessary to use new charge set for R-410A. The pressure of R-410A is 1.6 times higher than that of R-22. Thus, the high pressure side gauge of charge set should be used higher pressure gauge of 50kg/cm<sup>2</sup> range.

## Balance Refrigerant of the 3-way Valve

(Gas leakage)



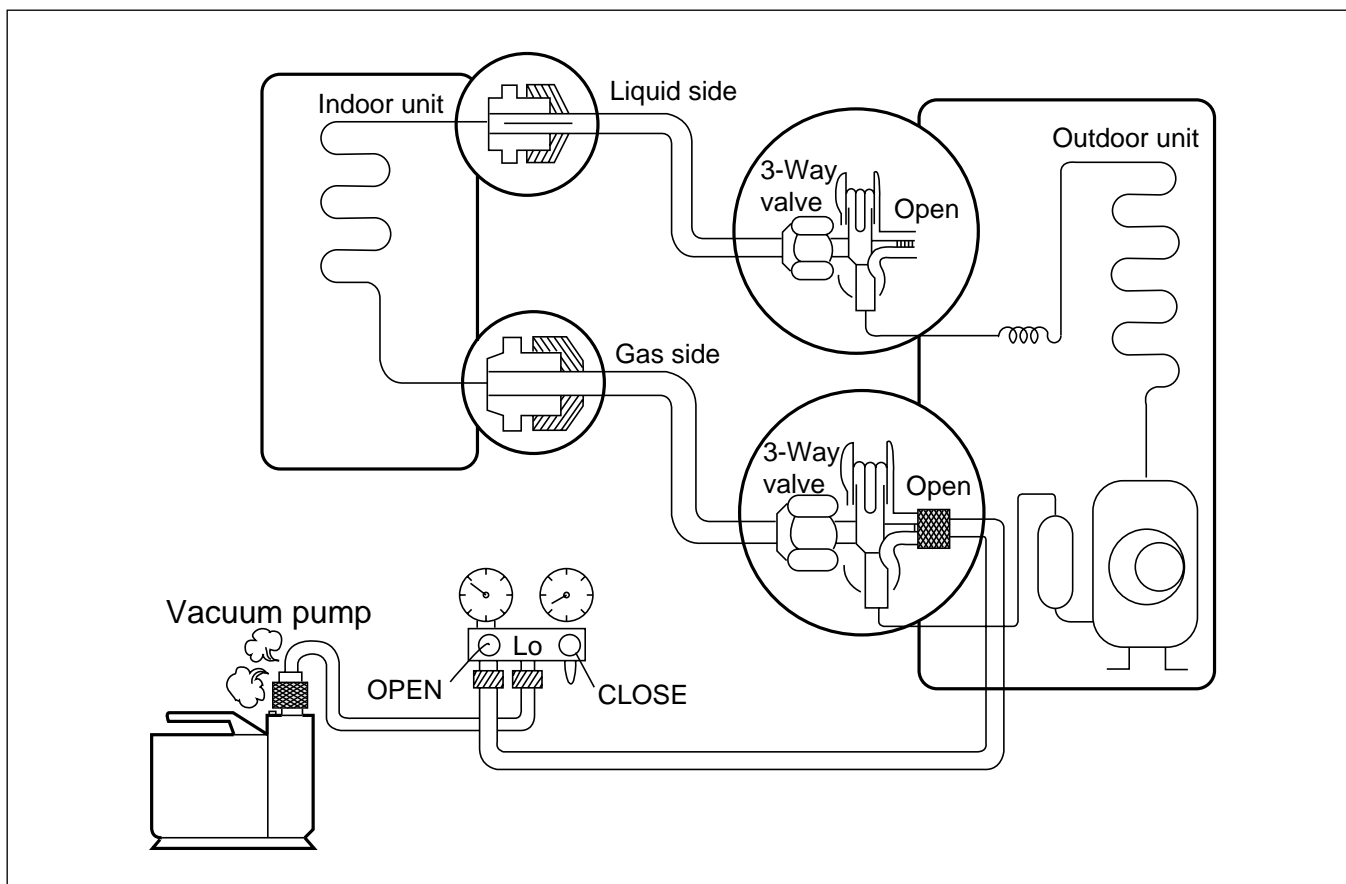
### • Procedure

- (1) Confirm that both the 2-way and 3-way valves are set to the back seat.
- (2) Connect the charge set to the 3-way valve's port.
  - Leave the valve on the charge set closed.
  - Connect the charge hose to the service port.
- (3) Open the valve (Lo side) on the charge set and discharge the refrigerant until the gauge indicates 0 kg/cm<sup>2</sup>G.
  - If there is no air in the refrigerant cycle (the pressure when the air conditioner is not running is higher than 1 kg/cm<sup>2</sup>G), discharge the refrigerant until the gauge indicates 0.5 to 1 kg/cm<sup>2</sup>G. If this is the case, it will not be necessary to apply a evacuation.
  - Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will also be discharged.



## Evacuation

(All amount of refrigerant leaked)



### • Procedure

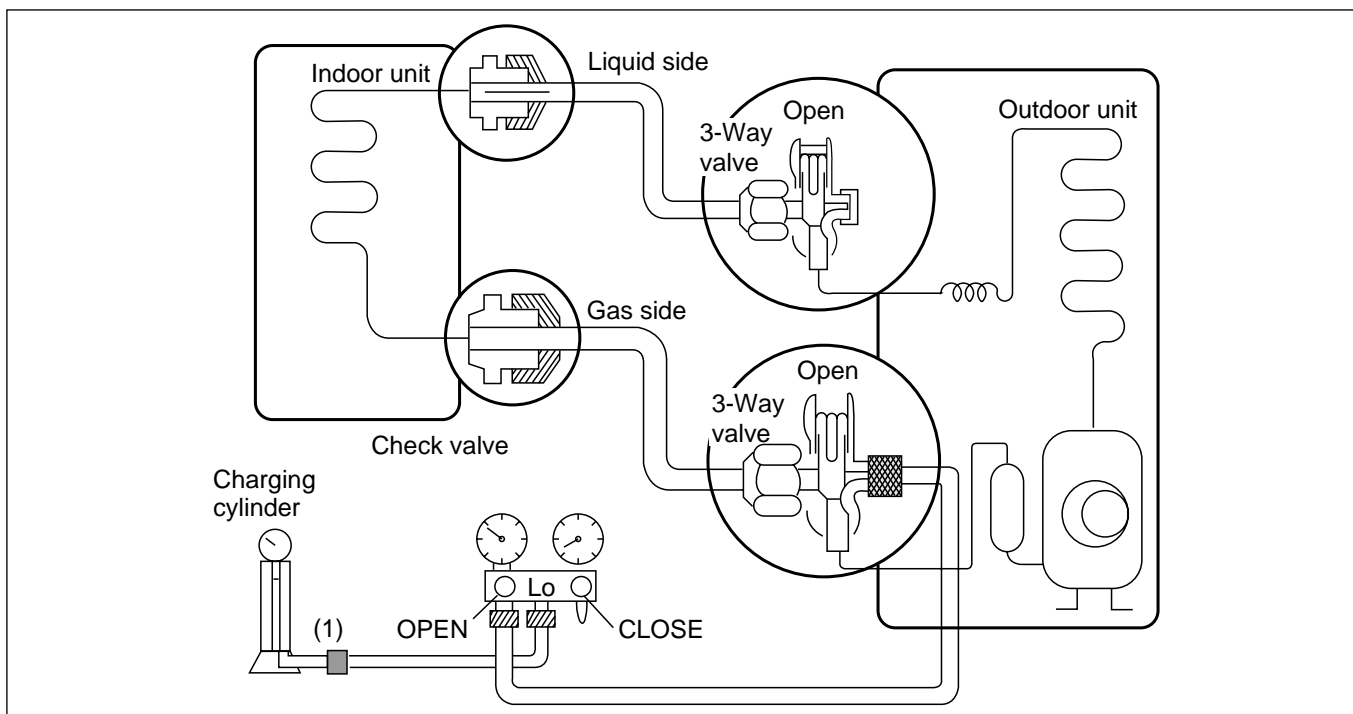
- (1) Connect the vacuum pump to the center hose of charge set center hose
- (2) Evacuation for approximately one hour.
  - Confirm that the gauge needle has moved toward -76 cmHg (vacuum of 4 mmHg or less).
- (3) Close the valve (Lo side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).
- (4) Disconnect the charge hose from the vacuum pump.
  - Vacuum pump oil.
  - If the vacuum pump oil becomes dirty or depleted, replenish as needed.

### ▲ CAUTION

Use vacuum pump equipped with check valve applied to be prevented from flowing backward.

## Gas Charging

(After Evacuation)



### • Procedure

#### (1) Connect the charge hose to the charging cylinder.

- Connect the charge hose which you dis-connected from the vacuum pump to the valve at the bottom of the cylinder.
- If you are using a gas cylinder, also use a scale and reverse the cylinder so that the system can be charged with liquid.

#### (2) Purge the air from the charge hose.

- Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air. (Be careful of the liquid refrigerant). The procedure is the same if using a gas cylinder.

#### (3) Open the valve (Lo side on the charge set and charge the system with liquid refrigerant.

- If the system can not be charged with the specified amount of refrigerant, it can be charged with a little at a time (approximately 150g each time) while operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure (pumping down-pin).

This is different from previous procedures.

Because you are charging with liquid refrigerant from the gas side, absolutely do not attempt to charge with larger amounts of liquid refrigerant while operating the air conditioner.

#### (4) Immediately disconnect the charge hose from the 3-way valve's service port.

- Stopping partway will allow the gas to be discharged.
- If the system has been charged with liquid refrigerant while operating the air conditioner turn off the air conditioner before disconnecting the hose.

#### (5) Mount the valve stem nuts and the service port nut.

- Use torque wrench to tighten the service port nut to a torque of 1.8 kg.m.
- Be sure to check for gas leakage.

### ⚠ CAUTION

This unit is charged with R-410A.  
Pay attention not to charge R-22.

## Additional gas charging

### (Gas leakage)

- When refrigerant is insufficient by leakage, recharge the unit with the refrigerant up to normal operating suction pressure.
- Use the graph or the equation below to get operating suction pressure according to indoor and outdoor temperature.

Suction pressure was measured at 3-way valve service port after operating the unit for 10 minutes.

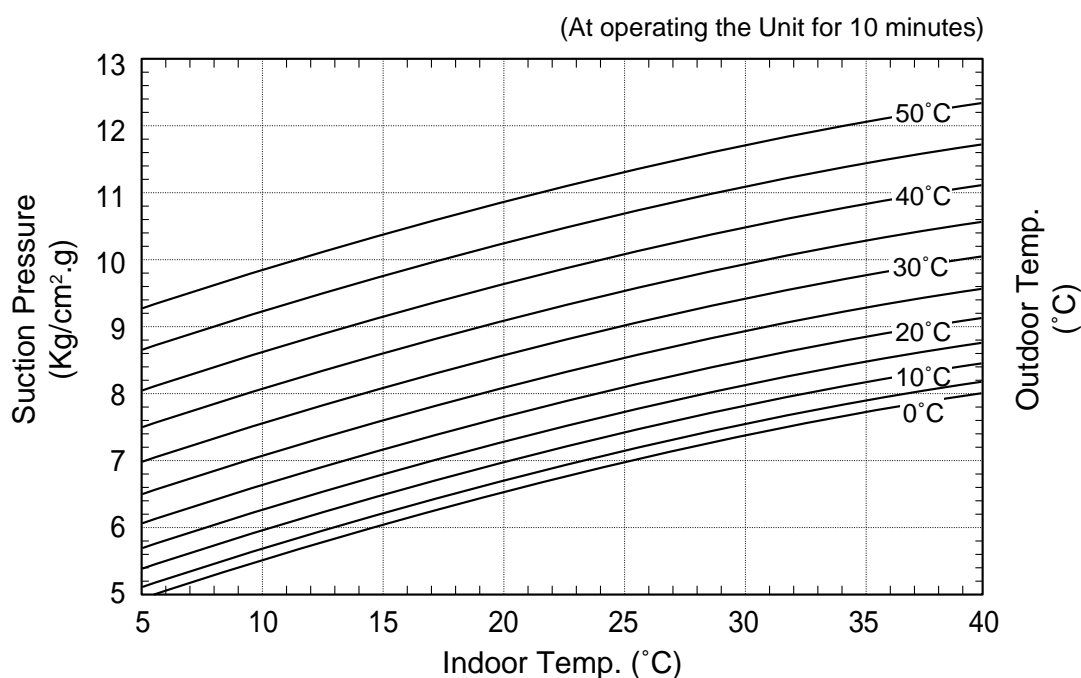
### The method of using graph

- Find outdoor temperature.
- Find indoor temperature onto the curve of outdoor temperature.
- Read suction pressure at the axis of ordinates.

### The method of using equation

- . Calculate suction pressure after putting indoor and outdoor temperature into the equation.

## Operating Suction Pressure (For R401A) (According to Indoor & Outdoor Temperature)



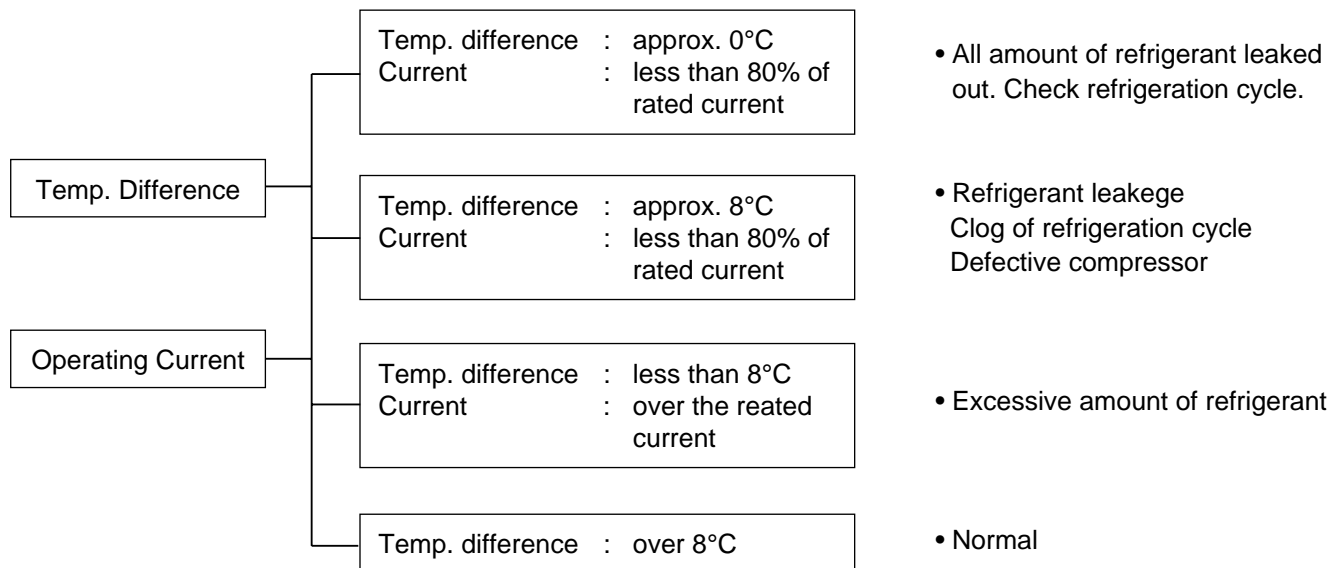
$$P = 3 + 0.0123 \times T_{out}^{1.5} + 0.8 \times T_{in}^{0.5}$$

Where, P : Suction Pressure(kg/cm<sup>2</sup>.g)  
 Tout : Outdoor Temperature(°C)  
 Tin : Indoor Temperature(°C)

## Cycle Parts

### Trouble analysis

1. Check temperature difference between intake and discharge air and operating current.



### NOTICE

Temperature difference between intake and discharge air depends on room air humidity. When the room air humidity is relatively higher, temperature difference is smaller. When the room air humidity is relatively lower temperature difference is larger.

2. Check temperature and pressure of refrigeration cycle.

Suction pressure (Compared with the normal value)	Temperature (Compared with the normal valve)	Cause of Trouble	Description
Higher	High	Defective compressor Defective 4-way reverse valve	Current is low.
	Normal	Excessive amount of refrigerant	High pressure does not quickly rise at the beginning of operation.
Lower	Higher	Insufficient amount of refrigerant (Leakage) Clogging	Current is low. Current is low.

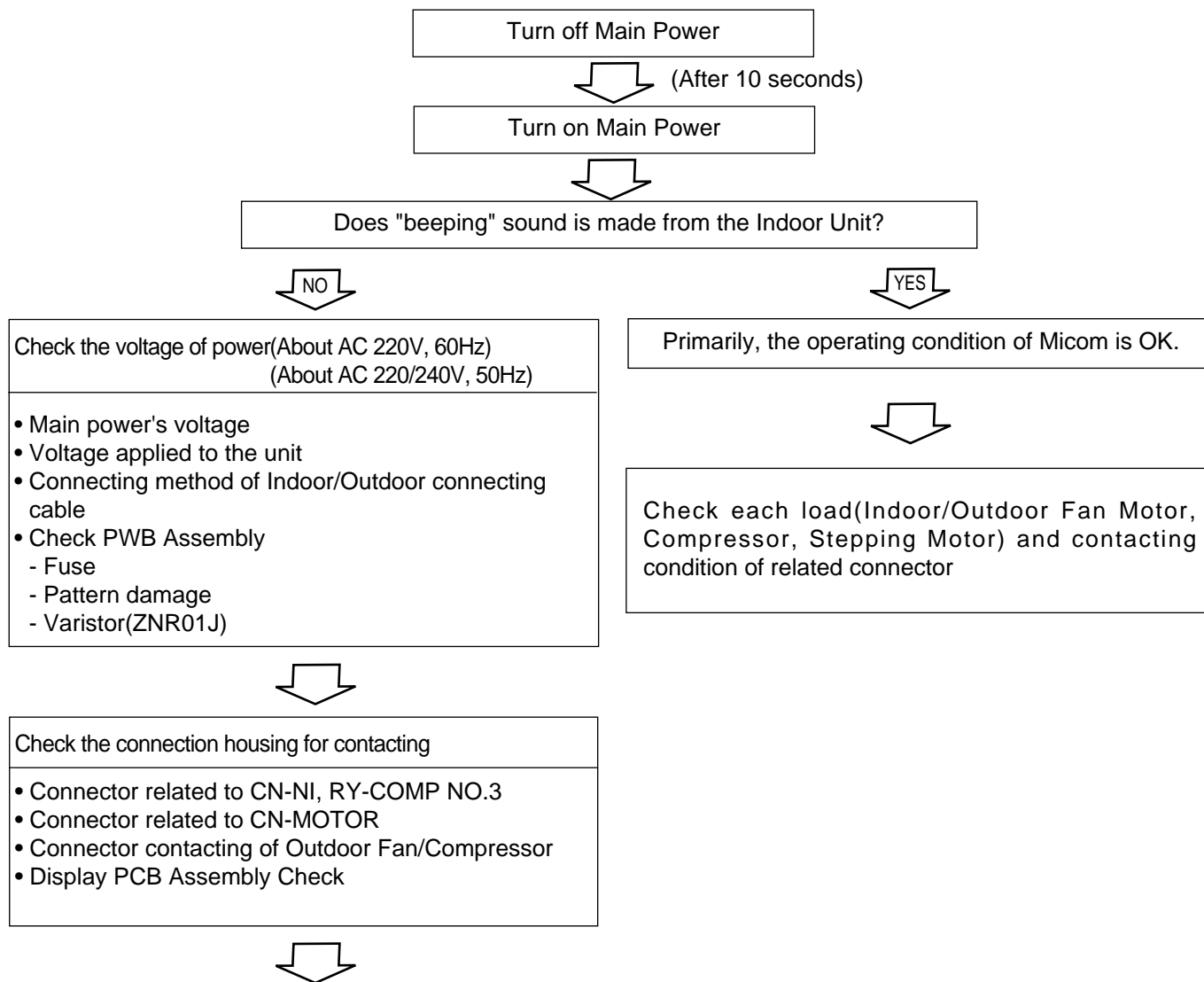
### NOTICE

1. The suction pressure is usually 8.5~9.5 kg/cm<sup>2</sup>G(Cooling) at normal condition.
2. The temperature can be measured by attaching the thermometer to the low pressure tubing and wrap it with putty.

# Electronic Parts

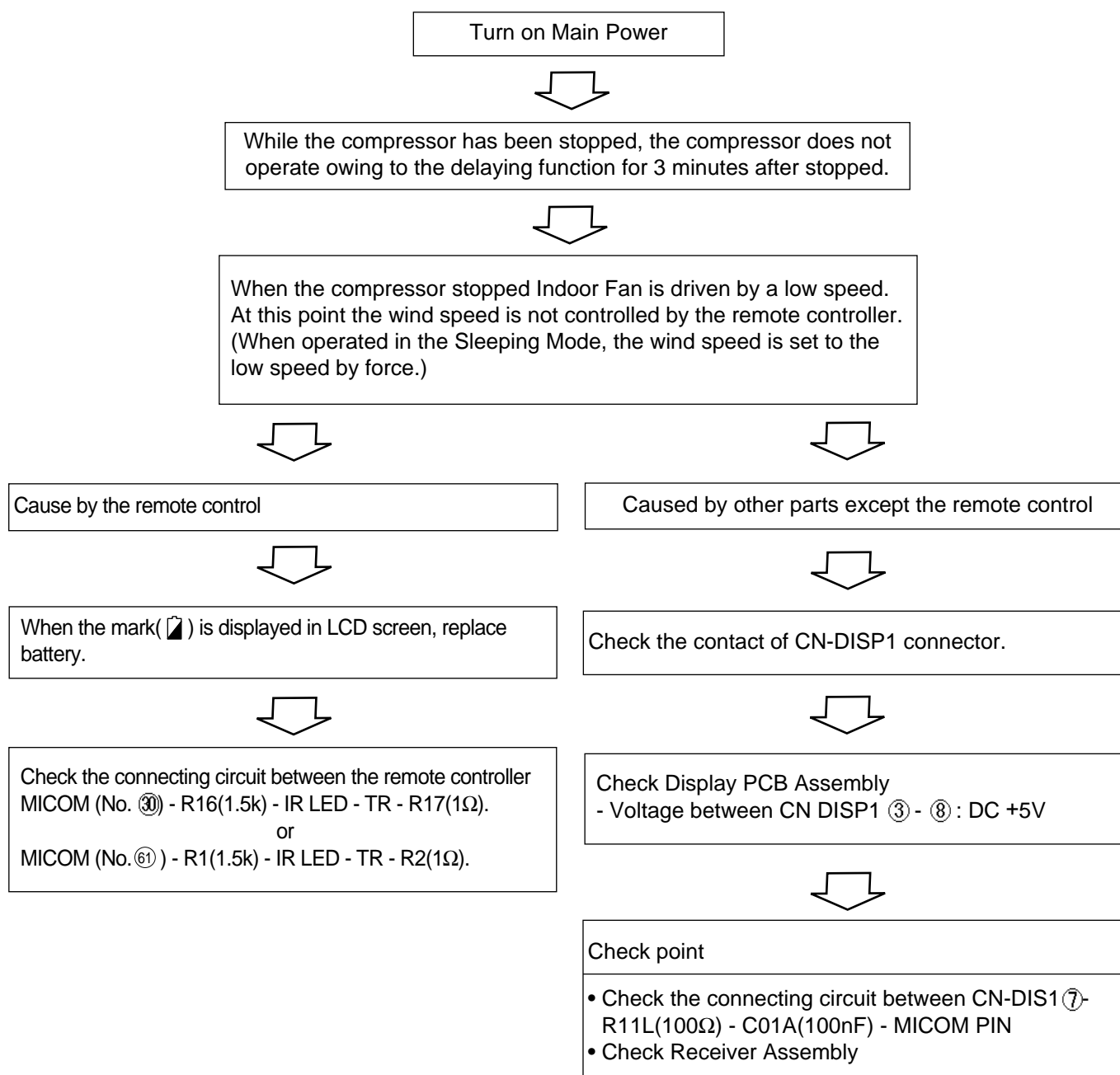
## Product does not operate at all.

(\* Refer to Electronic Control Device drawing and Schematic diagram.)

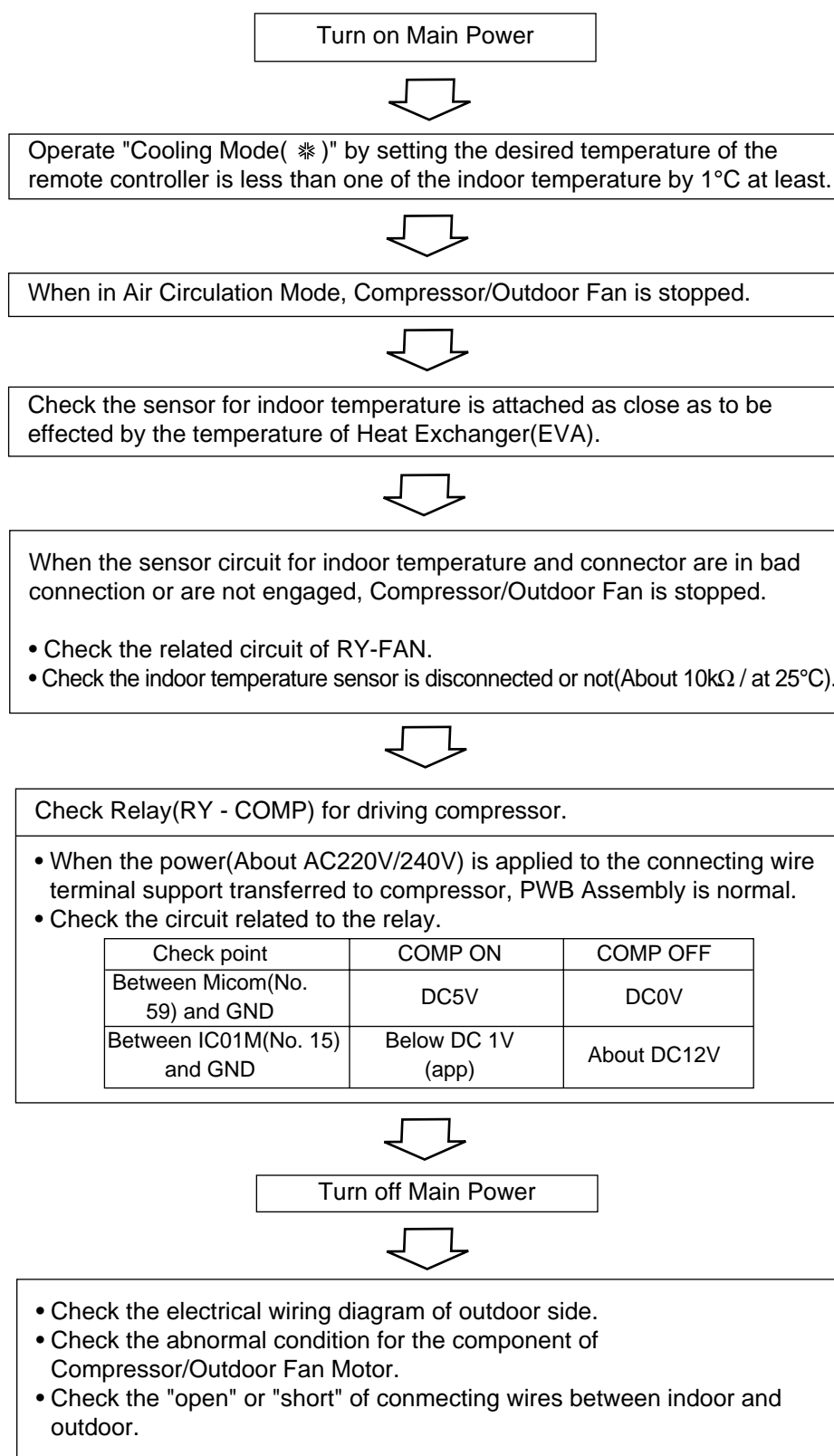


Main PCB Board Operation Check		
Items	Content	Remedy
<ul style="list-style-type: none"> <li>• SMPS Transformer (Indoor unit)               <ul style="list-style-type: none"> <li>- Input Voltage</li> <li>- Output Voltage(C03D)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- About AC220V/240V±10% - Check the power voltage</li> <li>- About DC12V</li> </ul>	<ul style="list-style-type: none"> <li>• Replace Trans</li> </ul>
↓↓ <ul style="list-style-type: none"> <li>• IC01D(7805) Output (Indoor/Outdoor unit)</li> </ul>	<ul style="list-style-type: none"> <li>• DC +5V</li> </ul>	<ul style="list-style-type: none"> <li>• Replace IC01D</li> </ul>
↓↓ <ul style="list-style-type: none"> <li>• IC01A(KIA7036, Reset IC) OSC01B(8MHz)</li> </ul>	<ul style="list-style-type: none"> <li>• Voltage of IC No.1, (DC +4.5V over) and Soldering condition.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace faulty parts</li> </ul>

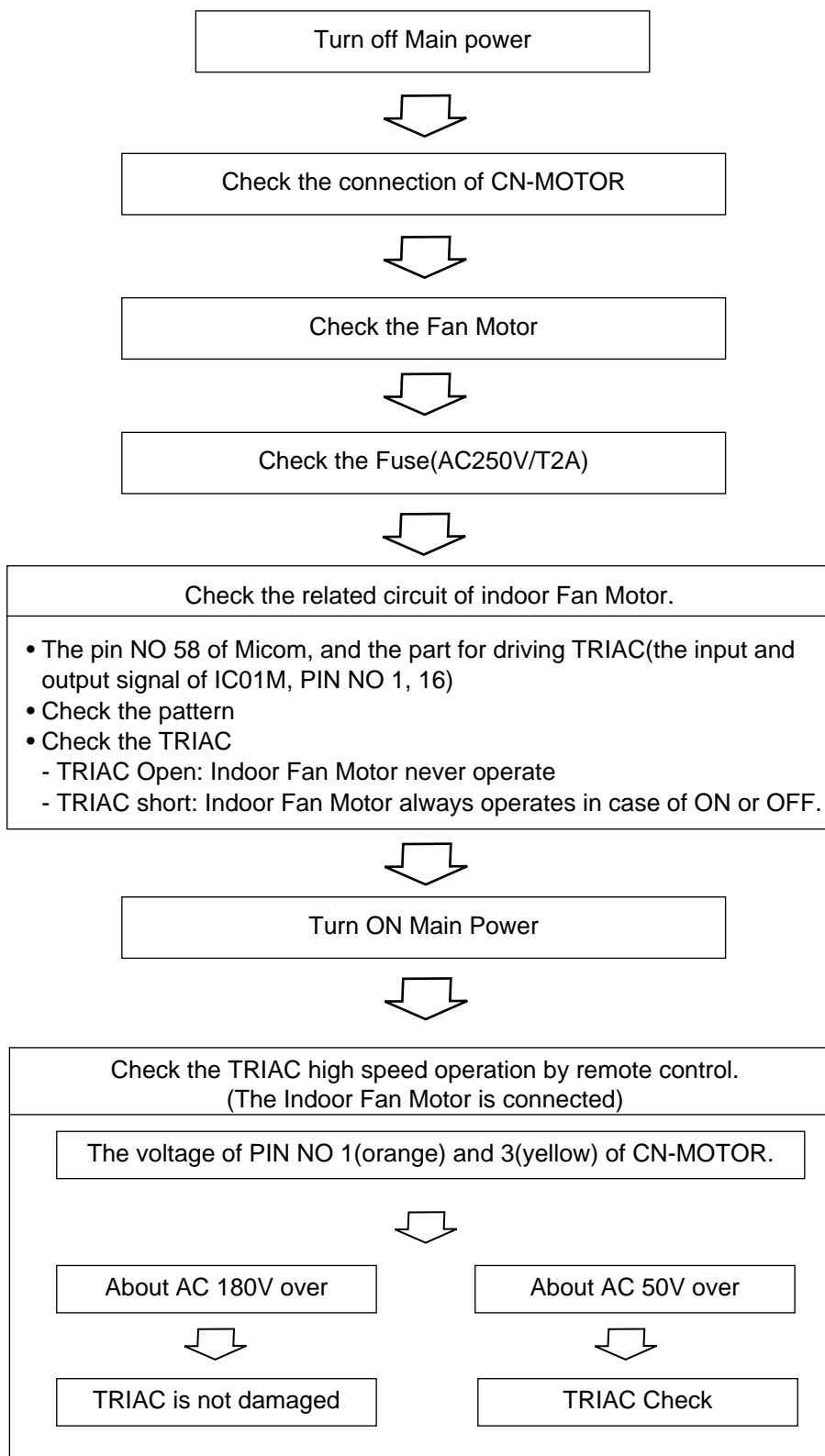
## The product is not operate with the remote controller.



# Compressor/Outdoor Fan are unable to drive.



## When indoor Fan does not operate.





## When Vertical Louver does not operate.

- Confirm that the Vertical Louver is normally geared with the shaft of Stepping Motor.
- If the regular torque is detected when rotating the Vertical Louver with hands ⇒ Normal



- Check the connecting condition of CN-U/D Connector
- Check the soldering condition(on PWB) of CN-U/D Connector



### Check the operating circuit of the Vertical Louver

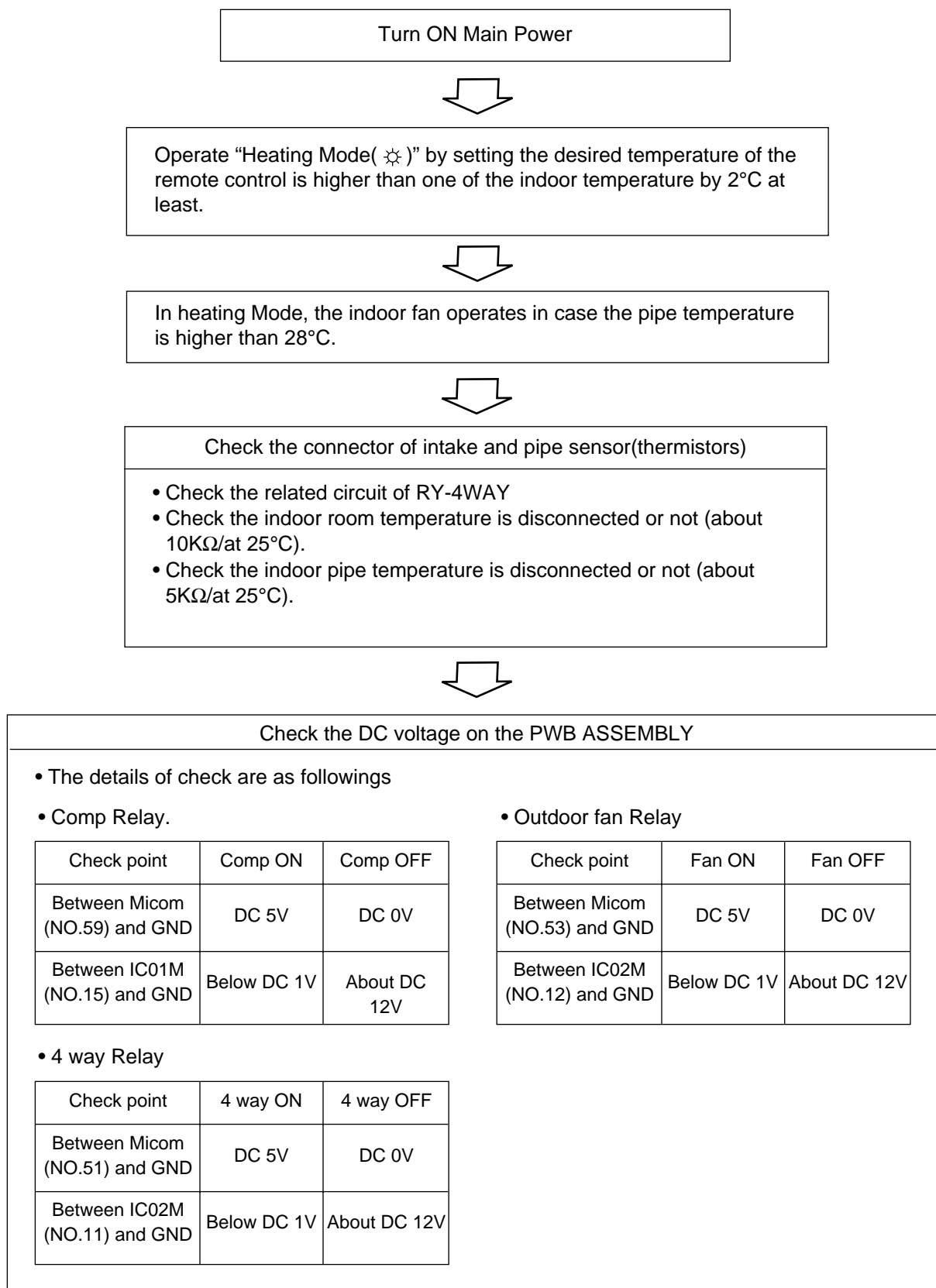
- Confirm that there is DC +12V between pin ⑤(RED) of CN-U/D and GND.
- Confirm that there is a soldering short at following terminals.
  - Between ⑥①, ⑥② and ⑥③ of MICOM
  - Between ③, ④, ⑤ and ⑥ of IC01M
  - Between ⑭, ⑬, ⑫ and ⑪ of IC01M



### If there are no problems after above checks

- Confirm the assembly conditions that are catching and interfering parts in the rotation radial of the Vertical Louver

## When Heating does not operate





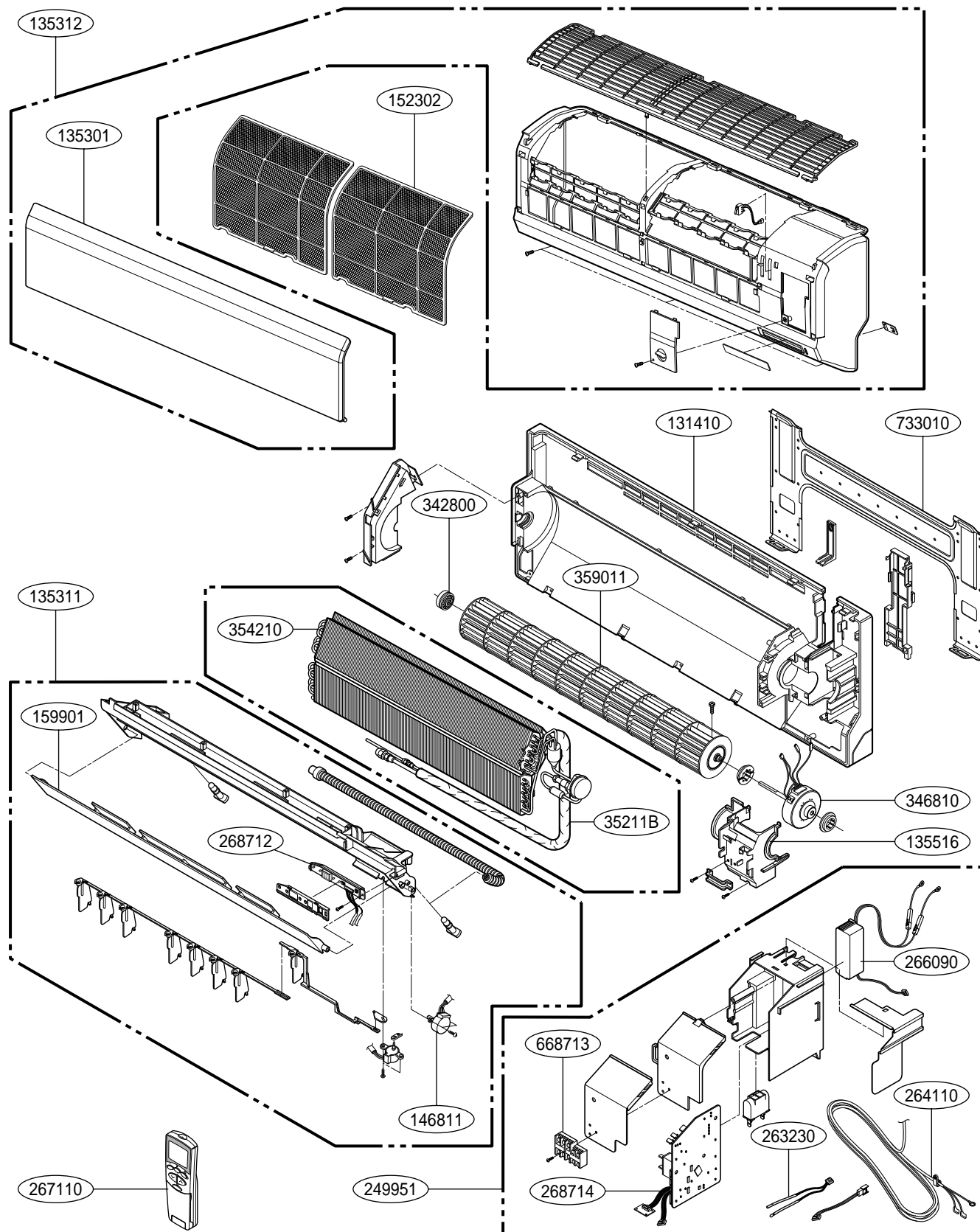
Turn off Main Power



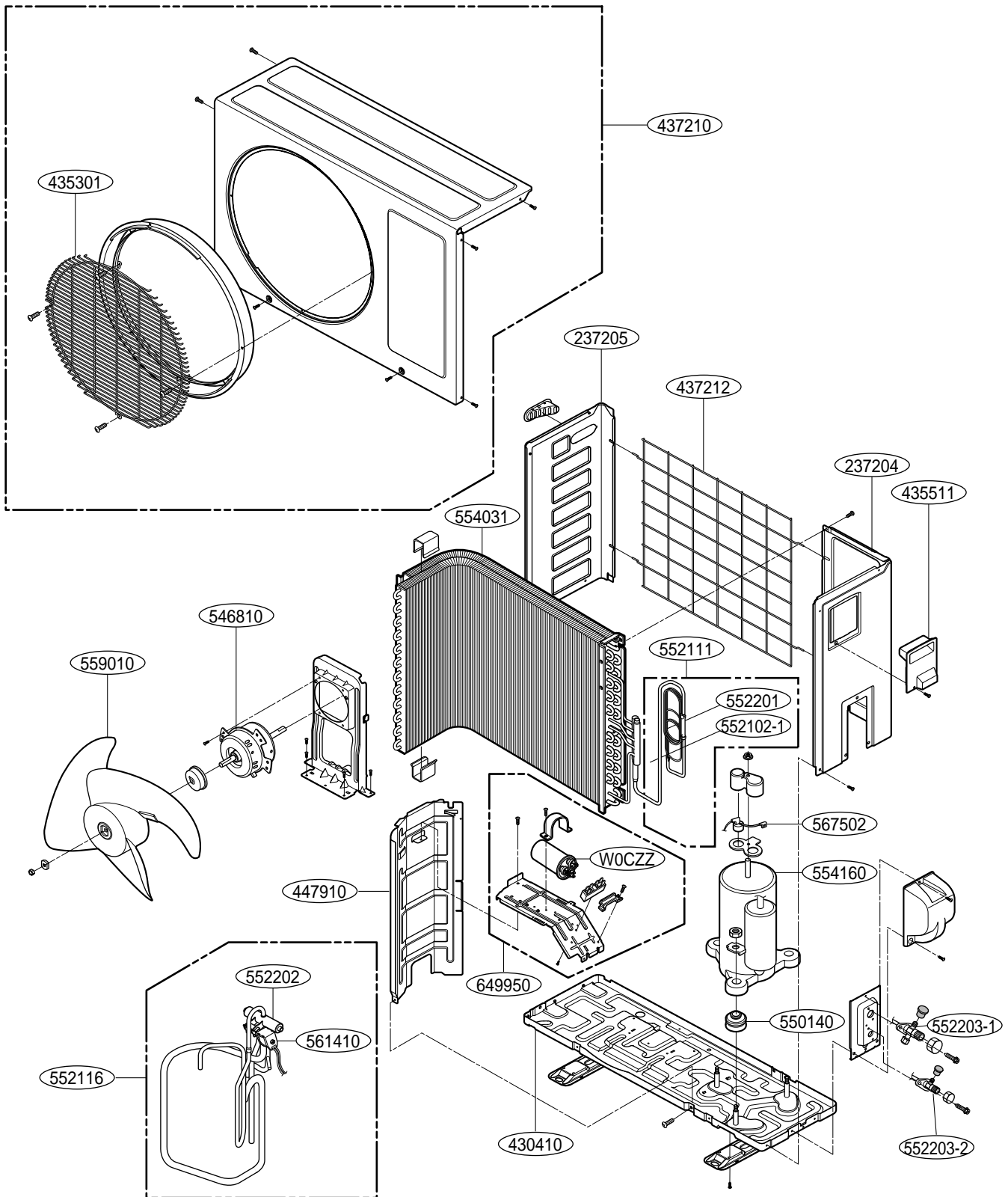
- Check the electrical wiring diagram of outdoor side.
- Check the abnormal condition for the component of Compressor/Outdoor Fan Motor, 4 way.
- Check the "open" or "short" of connecting wires between indoor and outdoor.

# Exploded View

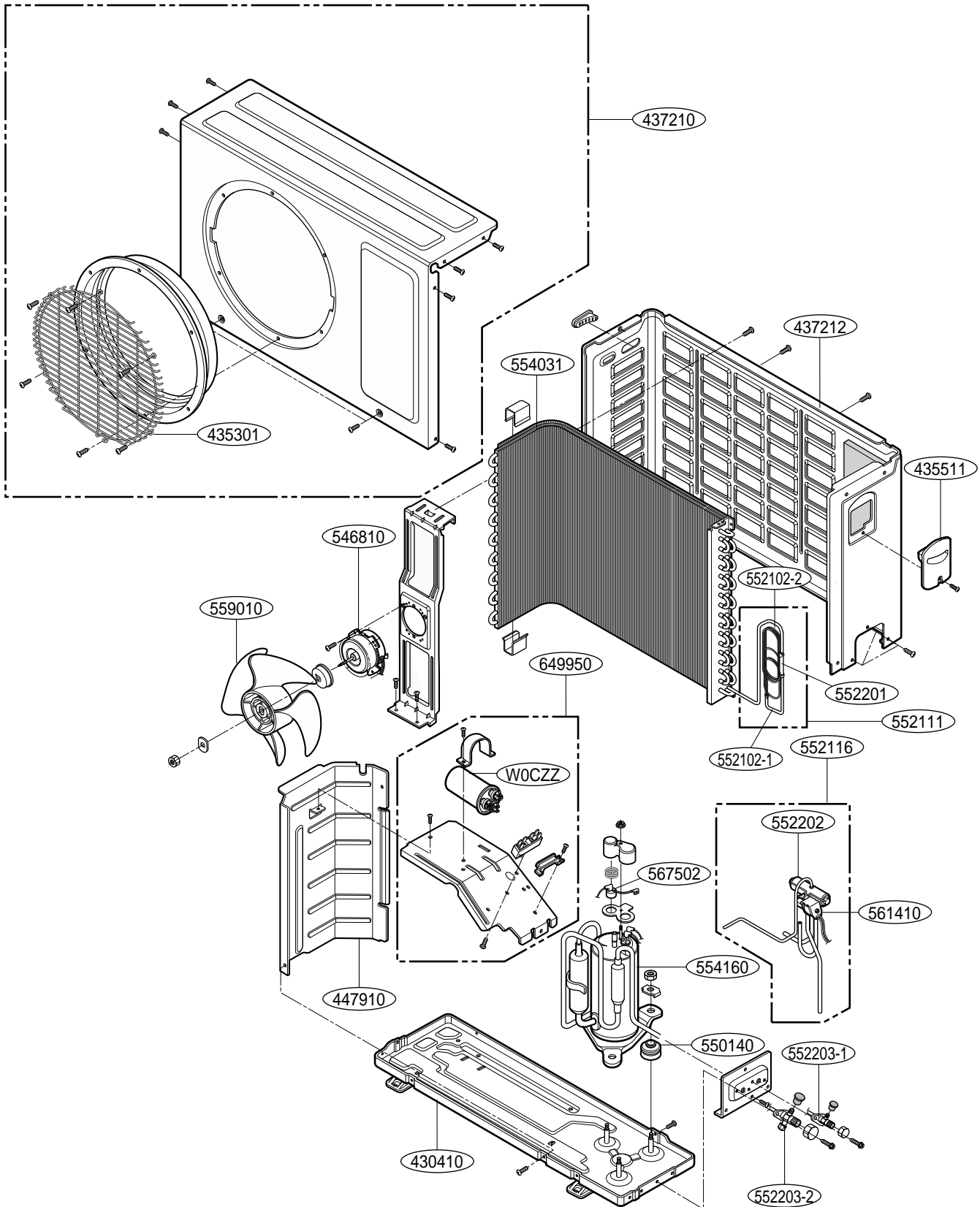
## Indoor Unit



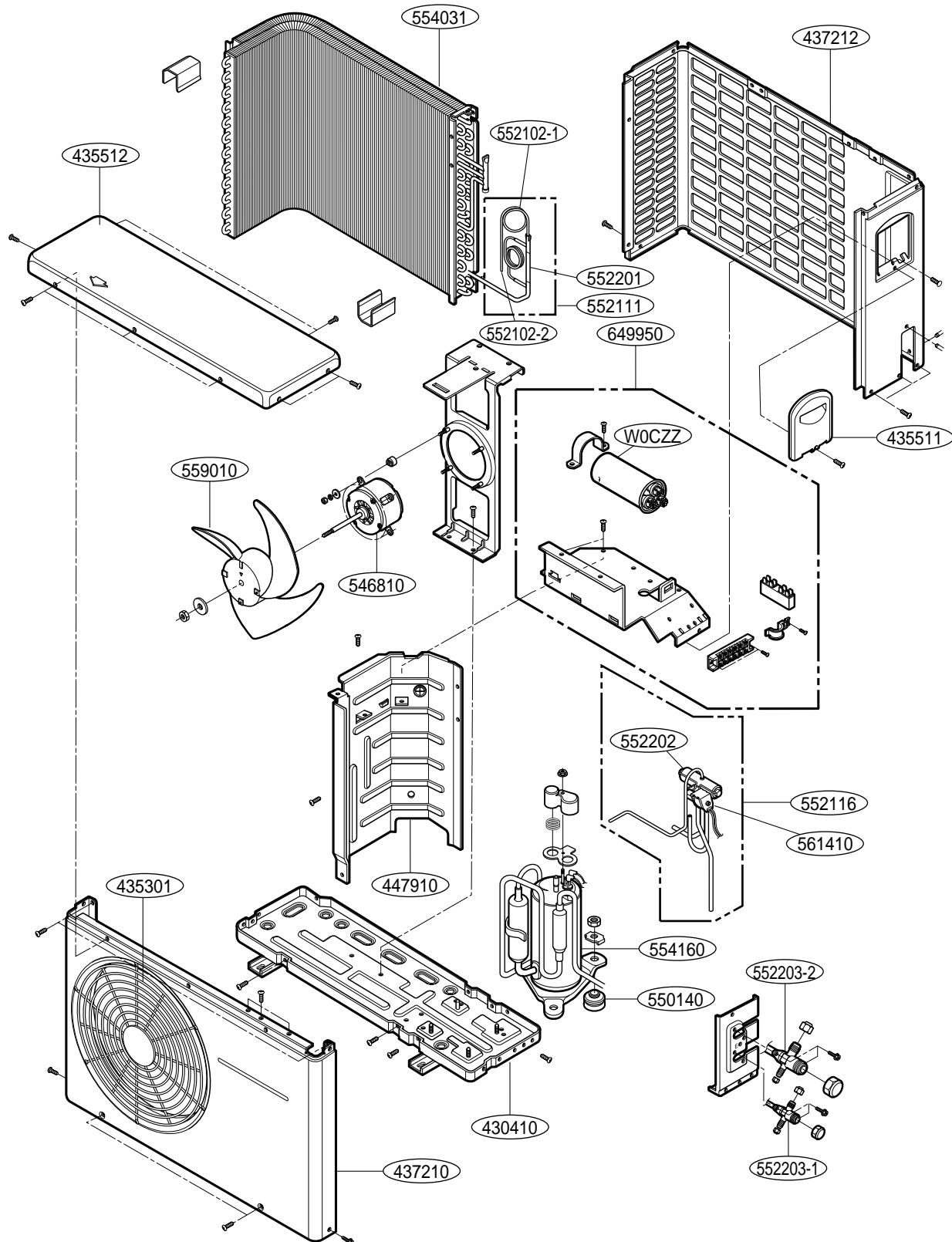
## Outdoor Unit: 12k Btu/h Series



## Outdoor Unit: 9k Btu/h Series



## Outdoor Unit: 18k, 24k Btu/h Series



# Replacement Parts List

## Parts List (Indoor)

LOCATION No.	DESCRIPTION	PART No.			REMARKS
		S092CG N40	S122CG N40	S182CG N50	
131410	CHASSIS ASSEMBLY	3141A20019B	3141A20019B	3141A20020C	R
135311	GRILLE ASSEMBLY, DISCHARGE(INDOOR)	3531A10307D	3531A10307D	3531A20252C	R
135312	GRILLE ASSEMBLY, FRONT(INDOOR)	3531A14002G	3531A14002G	3531A20253G	R
135516	COVER ASSEMBLY, MOTOR	3551A20156A	3551A20156A	3551A20154A	R
146811	MOTOR ASSEMBLY, STEP	4681A20055A	4681A20055A	4681A20055A	R
152302	FILTER(MECH), A/C	5230A20051A	5230A20051A	5230A20052A	R
159901	VANE, HORIZONTAL	5990A20048A	5990A20048A	5990A20049A	R
249951	CONTROL BOX ASSEMBLY, INDOOR	4995A10157J	4995A10157J	4995A90168L	R
263230	THERMISTOR ASSEMBLY	6323A20004A	6323A20004A	6323A20004A	R
264110	POWER CORD ASSEMBLY	6411A20015H	6411A20015H	6411A20047A	R
267110	REMOTE CONTROLLER ASSEMBLY	6711A20073L	6711A20073L	6711A20077T	R
268712	PWB(PCB) ASSEMBLY, DISPLAY	6871A20574B	6871A20574B	6871A20624B	R
268714	PWB(PCB) ASSEMBLY, MAIN	6871A20572E	6871A20572E	6871A20572E	R
342800	BEARING	4280A20004B	4280A20004B	4280A20004A	R
346810	MOTOR ASSEMBLY, INDOOR	4681A20151E	4681A20151D	4681A20003B	R
35211B	TUBE ASSEMBLY, TUBING	5211A21363A	5211A21363B	5211A21378E	R
354210	EVAPORATOR ASSEMBLY, FIRST	5421A20218A	5421A20218A	5421A20220A	R
359011	FAN ASSEMBLY, CROSS FLOW	5901A20017F	5901A20017F	5901A92441E	R
668713	PWB(PCB) ASSEMBLY, SUB	6871A20577X	6871A20577T	6871A20576G	R
733010	PLATE ASSEMBLY, INSTALL	3301A20011A	3301A20011A	3301A20002A	R
W0CZZ	CAPACITOR, DRAWING	3H01487K	3H01487K	3H01487F	R

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## Parts List (Indoor)

LOCATION No.	DESCRIPTION	PART No.			REMARKS
		S242CG N50	S182HG N5	S242HG N50	
131410	CHASSIS ASSEMBLY	3141A20020C	3141A20020C	3141A20020C	R
135311	GRILLE ASSEMBLY, DISCHARGE(INDOOR)	3531A20252C	3531A20252C	3531A20252C	R
135312	GRILLE ASSEMBLY, FRONT(INDOOR)	3531A20253G	3531A20253L	3531A20253L	R
135516	COVER ASSEMBLY, MOTOR	3551A20154B	3551A20154A	3551A0154B	R
146811	MOTOR ASSEMBLY, STEP	4681A20055A	4681A20055A	4681A20055A	R
152302	FILTER(MECH), A/C	5230A20052A	5230A20052A	5230A20052A	R
159901	VANE, HORIZONTAL	5990A20049A	5990A20049A	5990A20049A	R
249951	CONTROL BOX ASSEMBLY, INDOOR	4995A90168M	4995A90168Q	4995A10168L	R
263230	THERMISTOR ASSEMBLY	6323A20004A	6323A20004A	6323A20004A	R
264110	POWER CORD ASSEMBLY	6411A20047B	6411A20047A	6411A20047B	R
267110	REMOTE CONTROLLER ASSEMBLY	6711A20077T	6711A20077V	6711A20077V	R
268712	PWB(PCB) ASSEMBLY, DISPLAY	6871A20624B	6871A20624B	6871A20624B	R
268714	PWB(PCB) ASSEMBLY, MAIN	6871A20572E	6871A20572C	6871A20572E	R
342800	BEARING	4280A20004A	4280A20004A	4280A20004A	R
346810	MOTOR ASSEMBLY, INDOOR	4681A20003F	4681A20003B	4681A20003F	R
35211B	TUBE ASSEMBLY, TUBING	5211A21378B	5211A21378E	5211A21378B	R
354210	EVAPORATOR ASSEMBLY, FIRST	5421A20220A	5421A20220A	5421A20220A	R
359011	FAN ASSEMBLY, CROSS FLOW	5901A92441E	5901A92441E	5901A92441E	R
668713	PWB(PCB) ASSEMBLY, SUB	6871A20576H	6871A20576Q	6871A20576R	R
733010	PLATE ASSEMBLY, INSTALL	3301A20002A	3301A20002A	3301A20002A	R
W0CZZ	CAPACITOR, DRAWING	3H01487G	3H01487F	3H01487G	R

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**Parts List (Outdoor)**

LOCATION No.	DESCRIPTION	PART No.			REMARKS
		S092CG U40	S122CG U40	S182CG U50	
237204	PANEL SIDE	3720A10238A	3720A10238A	-	R
237205	PANEL SIDE	3720A10239A	3720A10239A	-	R
430410	BASE ASSEMBLY, OUTDOOR L/N	3041A20079A	3041A20072D	2H02079T	R
435301	GRILLE, DISCHARGE	3530A10250B	3530A10250B	1H00840C	R
435511	COVER ASSY, CONTROL(OUTDOOR)	3551A30115E	3551A30136A	3551A20030C	R
435512	COVER ASSEMBLY, TOP(OUTDOOR)	-	-	3H03465J	
437210	PANEL ASSEMBLY, FRONT(OUTDOOR)	3721A20258A	3721A10153B	2H02674V	R
437212	GRILLE, REAR	3530A10172C	3530A10251B	1H00697M	R
447910	BARRIER ASSY, OUTDOOR	4790A10025D	4790A10057B	4791AR7047A	R
546810	MOTOR ASSEMBLY, OUTDOOR	4681A20068K	4681A20004D	4681AR1392R	R
550140	ISOLATOR, COMP	4H00982E	4H00982E	4H00982E	R
552111	TUBE ASSEMBLY, CAPILLARY	5211A21143R	5211A21143P	5211A21202B	R
552116	TUBE ASSEMBLY, REVERSING	-	-	-	R
552201	VALVE, CHECK	-	-	-	R
552202	VALVE, REVERSING	-	-	-	R
552203-1	VALVE, SERVICE	5220A20005B	5220A20005B	2H0220E	R
552203-2	VALVE, SERVICE	5220A20040A	2H01890B	2A00392N	R
554031	CONDENSER ASSEMBLY, BENT	5403A20059F	5403A20198M	5403A20072Q	R
554160	COMPRESSOR SET	2520UKAK2CA	5416A20013V	2520UMDK2JA	R
559010	FAN ASSEMBLY, PROPELLER	5900AR1266C	5901A10055A	5900AR1119B	R
561410	COIL ASSEMBLY, REVERSING VALVE	-	-	-	R
567502	O.L.P	6750U-L039A	6750A30001Q	-	R
649950	CONTROL BOX ASSEMBLY, OUTDOOR	4995A10162B	4995A20441D	4781AR1459P	R
W0CZZ	CAPACITOR, DRAWING	6120AR2194H	2H01451P	2A00986Z	R

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LOCATION No.	DESCRIPTION	PART No.			REMARKS
		S242CG U50	S182HG U50	S242HG U50	
237204	PANEL SIDE	-	-	-	R
237205	PANEL SIDE	-	-	-	R
430410	BASE ASSEMBLY, OUTDOOR L/N	3041A10027C	3041A10027C	3041A10027C	R
435301	GRILLE, DISCHARGE	3530A20007J	3530A20007J	3530A20007J	R
435511	COVER ASSY, CONTROL(OUTDOOR)	3551A30079M	3551A30079N	3551A30079N	R
435512	COVER ASSEMBLY, TOP(OUTDOOR)	-	-	-	
437210	PANEL ASSEMBLY, FRONT(OUTDOOR)	3721A20113C	3721A20260A	3721A20260A	R
437212	GRILLE, REAR	3721A20114C	3721A20114C	3721A20114F	R
447910	BARRIER ASSY, OUTDOOR	4791A20023A	4791A20023A	4791A20023L	R
546810	MOTOR ASSEMBLY, OUTDOOR	4681A20028T	4681A20028T	4681A20028T	R
550140	ISOLATOR, COMP	4H00982E	4H00982E	4H0098E	R
552111	TUBE ASSEMBLY, CAPILLARY	5211A30778B	5211A30812A	5211A30778C	R
552116	TUBE ASSEMBLY, REVERSING	-	5211A20270M	5211A20270L	R
552201	VALVE, CHECK	-	3A01020H	3A01020D	R
552202	VALVE, REVERSING	-	3A02027G	3A02027G	R
552203-1	VALVE, SERVICE	5220A20002C	5220A20005B	5220A20002C	R
552203-2	VALVE, SERVICE	2A00392E	2A00392E	2A00392E	R
554031	CONDENSER ASSEMBLY, BENT	5403A20164E	5403A20205A	5403A20164E	R
554160	COMPRESSOR SET	2520UHFk2DB	2520UMBK2XA	2520UHgk2DA	R
559010	FAN ASSEMBLY, PROPELLER	5901A10032B	5901A10032A	5901A10032A	R
561410	COIL ASSEMBLY, REVERSING VALVE	-	3A02028Y	3A02028Y	R
567502	O.L.P	-	-	-	R
649950	CONTROL BOX ASSEMBLY, OUTDOOR	4995A20261X	4995A00006E	4995A00006E	R
W0CZZ	CAPACITOR, DRAWING	2A00986Y	6210AR2194F	6120AR2194F	R

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